

[mnid](#)) for third-party email, calendar, and contact apps, but these don't work with iCloud email.)

I have a suggestion for how to fix this, but I can't test it, as I have iCloud-synced mail set up correctly. Make sure you have a current system backup with Time Machine or a clone before proceeding.

1. Open Mail, and choose Mail → Preferences.
2. Click the Accounts button. If your iCloud account appears there with the iCloud logo and the label "iCloud" with "IMAP" underneath, and you're still being prompted to email, contact Apple directly (go.macworld.com/supt): something's not correct with your account.
3. If it appears as an @ icon with the name next to it, then your suspicions are confirmed: it's set up like a regular email account. Select it and click the minus (-) button at the bottom of the list.
4. When prompted to delete, confirm. This won't delete your cloud-stored email, as it remains in iCloud. It will delete the temporarily cached copies downloaded. (If you see the error when you confirm deletion that "The iCloud account 'account name' is shared by other Applications on this Mac," contact Apple for tech support: something isn't right.)
5. Open the iCloud preference pane.

Now we have a series of branching choices:

> If you weren't logged into iCloud, log in and authenticate. Your iCloud email should now be correctly added to Mail.

> However, if you were already connected to iCloud on your Mac, look at the Mail checkbox:

If checked: Uncheck it, respond to confirmations, and then check it again. This should resync the connection.

If not checked: Click the box to check it, and this should sync your iCloud configuration.

If none of this solved a problem like this you have, write in and give us details about what you're seeing (screen captures help), and we'll see if we can troubleshoot further. ■

Ask Mac 911

We've compiled a list of the most commonly asked questions we get, and the answers to them: go.macworld.com/mac911faq to see if you're covered. If not, we're always looking for new problems to solve! Email us at mac911@macworld.com including screen captures as appropriate.

Mac 911 can't provide direct email responses or answers for every question and we don't provide direct troubleshooting advice. For that, turn to AppleCare, an Apple Store Genius Bar, or the Apple Support Communities.

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MARCH 2019

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iPhone EXPERIENCE GREAT

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TO THE NEXT LEVEL

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we come
together.



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The old guard of Mac indie apps has thrived for more than 25 years

Four long-term Mac developers give insights on the evolution of their Mac apps.

BY GLENN FLEISHMAN

It seems like it was only yesterday that I first used BareBones Software's BBEdit (go.macworld.com/bedt), but in actuality, yesterday is so far away—25 years, in fact. With all the twists and turns across more than two decades of Apple as a company, Mac hardware, and the underlying operating system, you might think that BBEdit stands alone as a continuously-developed app shepherded largely or exclusively by the same

independent developer—an app without a giant company behind it. As it turns out, BBEdit is one of several apps that's been around the block more than a few times.

The longevity of indie apps is more extraordinary when you consider the changes Apple put the Mac through from the early 1990s to 2018. Apple switched from Motorola 680x0 processors to PowerPC to Intel chips, from 32-bit to 64-bit code, and among supported coding

languages. It revved System 7 to 8 to 9, then to Unix across now 15 major releases (from 10.0 to 10.14). That's a lot for any individual programmer or small company to cope with.

Bare Bones's head honcho, Rich Siegel, and the developers behind three other long-running Mac software programs shared with me their insight on development histories for over 25 years, what's changed the most during that time, and any hidden treasures users haven't yet found.

BBEDIT: MORE THAN A TEXT EDITOR

BBEdit emerged first as something more like a demo of a text editor in 1989, then it developed into a feature-complete but free app in 1992. Bare Bones released it as a fully-supported commercial program with version 2.5 on May 11, 1993, and it's from that date they count its anniversary, despite its bragging rights for a longer vintage. Founder Rich Siegel continues to drive development today from Rhode Island.

"We've extensively rewritten, upgraded, and optimized [BBEdit's] internal architecture," said Siegel. But the program continues to scratch the same itch it did at

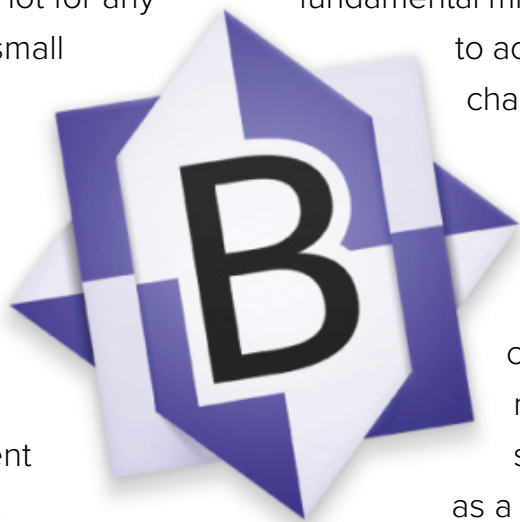
its start. "Even though it has evolved a great deal, BBEdit has stayed very close to its fundamental mission: empowering its users to accomplish tasks which would challenge or defeat other tools."

BBEdit has added many features over the years, including clever and highly configurable auto-completion, website management, and multi-file search. While it began life

as a coding tool, it now offers a minimalist environment with powerful search-and-replace and text-shuffling tools that appeals to programmers, writers (I spent hours in it daily), HTML coders, and people who have to massage text from one shape into another.

Siegel said one of the most unusual features BBEdit incorporated was built-in FTP and SFTP editing. Before it was integrated, BBEdit could work with file-transfer software like Fetch (see below) in a kind of round-trip arrangement. Siegel said a customer created a plug-in, and Bare Bones adopted his code and incorporated it.

But Siegel said what he would never have imagined adding is a "lorem ipsum" (go.macworld.com/lrip) generator, which appeared in the recent 12.5 release. This generates placeholder text, and the option dates back decades in page-layout



software. “There’s been a remarkable level of interest in that feature,” he said.

After nearly 30 years of development, Siegel said he’s still motivated to improve BBEdit because of customer feedback. “They’re the ones we’re here to serve, and so when someone writes in and expresses a need that we can address directly, we’re motivated to make that change,” he said. (I can testify from personal experience: I’ve asked for a lot of features over the years, and some made sense for the company to add.)

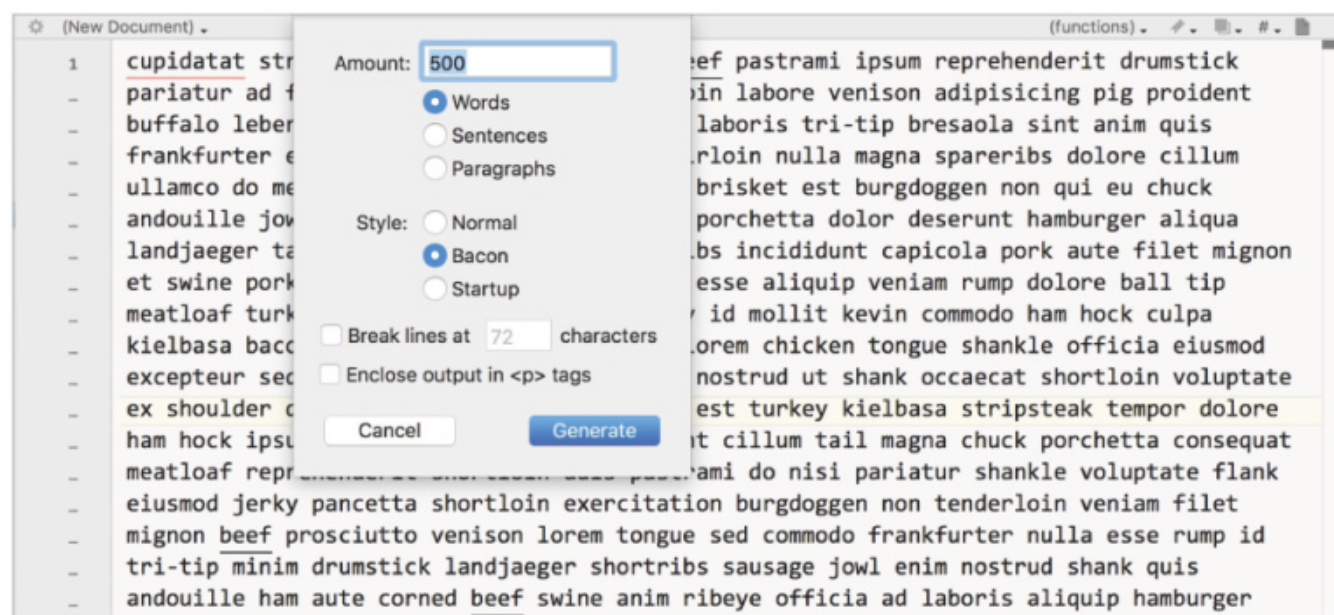
Bare Bones’s workload has grown and shrunk over the decades. At one point, the company sold and supported five apps, but currently it keeps its focus on BBEdit. “We’re constantly seeking to balance new feature development for major upgrades, maintenance work to fix issues that immediately affect our customers, and

internal modernizations to support platform evolution,” Siegel said.

The most important question, however, is what Easter eggs remain largely undiscovered, even by long-term users:

The one in the About box is a perennial favorite, but a remarkable number of folks don’t scroll down far enough to see it. (Or perhaps they’ve noticed it but assumed it was someone else.) There’s also one that shows up on April first, if you happen to be using one of the core non-editing features of BBEdit.

Bare Bones celebrated BBEdit’s 25th anniversary with some new “merch.” Faithful coders and writers can purchase branded T-shirts (go.macworld.com/bbte), enamel pins, and more, some of which



Did somebody say “bacon filler text”? BBEdit oblige in version 12.5.

bear the app's long-running slogan, "It still doesn't suck."

PCALC: THE PROGRAMMER'S CALCULATOR

James Thomson was a student at Glasgow University in 1992 when he decided to use principles learned in a human computer interaction class to test out his programming skills. He coded a more advanced calculator than the one shipping with Apple's System 7. With binary and hexadecimal calculations useful for his programming work, he dubbed it PCalc (go.macworld.com/pcal), short for "programmer's calculator."

He released it as a free program on December 23, 1992, but didn't charge for it while he was working a stint for Apple in the 1990s. In 2000, he released the first commercial version, and it was briefly licensed by Apple to include on some iMacs in the early 2000s. PCalc for iOS appeared along with a few hundred other apps in 2008 the day that Apple opened its third-party App Store.

PCalc largely works the same as in its early days, providing a full-featured equivalent of a variety of calculator types, including scientific calculators. It

offers some programmable functions, but stops short of simulating a graphing calculator like a TI-84. Nonetheless, Thomson has routinely had to update its interface to match changing Apple aesthetics, and revamped the app's innards as Apple created a core engine for math that's consistent across all four of its hardware platforms—macOS, iOS, watchOS, and tvOS. (Yup, there's a PCalc for Apple TV.)



At the center, though, lies code written in 1992, and translated from its original programming language ("like V'ger from *Star Trek The Motion Picture*," said Thomson). "Something new comes along from Apple, and yet another bird is added to the PCalc turducken" (go.macworld.com/tdkn) of software development, he said.

Thomson noted that the iOS and Watch interactions mark the biggest change in development. "PCalc has always been an 'emulation' of a physical calculator. You use a mouse or type on a keyboard to press the buttons," he said. "Now, with iOS, you're tapping directly on the buttons and it has become a physical calculator all by itself, one that fits in your pocket. As the old saying goes, the best calculator is the



And why shouldn't a calculator app feature a physics simulator and a racing game in its About box?

one that's with you."

PCalc always had a layout editor that Thomson relied on to produce new calculator types, and he ultimately opened this up to users, too. The app added custom conversions—useful if you're a type geek like me, and may need pica to points and points to inches—as well as supporting Siri Shortcuts in the latest iOS.

With core functionality relatively fixed—math doesn't change over time, fortunately—Thomson has devoted efforts to make PCalc more customizable and more fun across multiple platforms. The About screen of macOS and iOS includes a banana physics simulator and a racing

game. And those aren't even Easter eggs. He's also developed iMessage stickers using a panda motif that he adopted for PCalc along the way.

Thomson and his wife, Saskia, work full-time in Scotland on PCalc, the sole product of his company, TLA Systems, and he said that's a motivating factor in continuing its development. (They also sell PCalc merch

[go.macworld.com/pcmr], however.) "I do actually enjoy working on it and making something that people equally enjoy using," said Thomson, "And it's a process of constant learning, every day I learn something new." He's got no plans to retire the app (or himself) any time soon. "My passion since I first discovered the Mac nearly 30 years ago has always been making interesting and fun user interfaces. And look forward to keep doing it for a long time to come", he said.

While the Mac version of PCalc lacks unexplored Easter eggs, he did offer this hint in iOS: "Most people probably haven't even found Level 2 of the About

screen—for that, turn the truck around and look for the golden banana. I’ve said too much already!”

FETCH: A WHO WANTS TO BE A MILLIONAIRE PRIZE

Jim Matthews, the creator of the file-transfer program Fetch (go.macworld.com/ftch), made the right decision in 2000 when asked by Regis Philbin (go.macworld.com/rgph) whether he could answer the top-yielding question in *Who Wants To Be a Millionaire?* First, he used his audience lifeline. Then, he opted to pass, and walked home with \$500,000. That was good, because the audience majority was wrong and Matthews didn’t know the correct response. (The question [go.macworld.com/jmat] asked which network news anchor

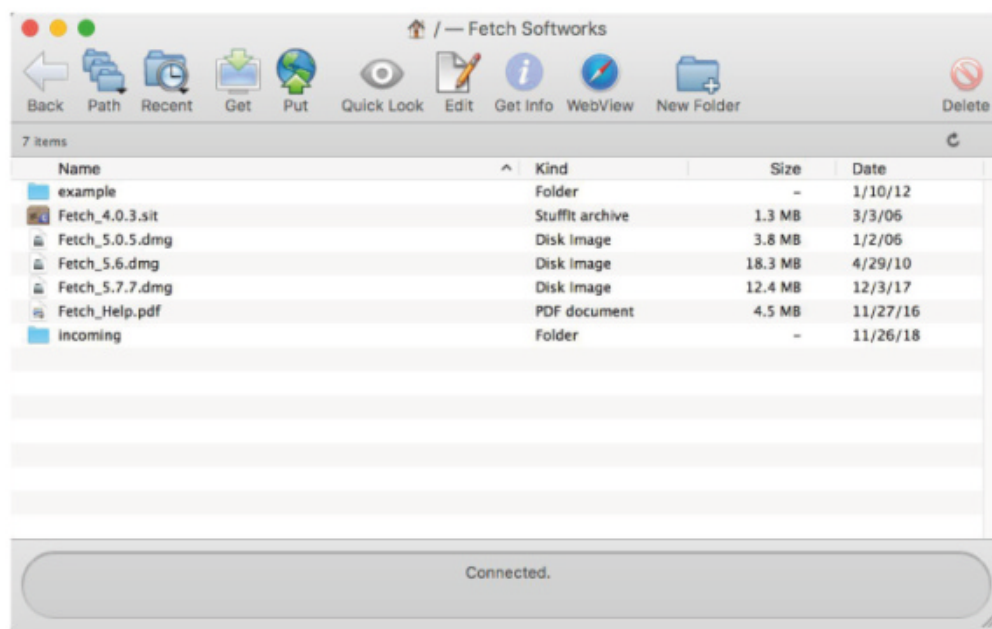
had hosted a children’s radio program at age 9. The answer? Peter Jennings.)

Matthews used some of that money to purchase Fetch and spin out his own company from Dartmouth College, where he’d worked for many years, and where he began development on Fetch in 1989 as an in-house program useful to staff and students. Matthews said that Dartmouth had picked the Mac as its preferred desktop computer, but had all sorts of central computer systems. He pitched writing Fetch as a kind of universal file-transfer app, and chose FTP (File Transfer Protocol), because it was the only standard that worked across all of them.

Fetch predates System 7, and originally ran in System 6 as an application—as a desk accessory, because not everyone

was using MultiFinder, Apple’s first entry into allowing multiple simultaneously available programs.

As the internet rose in availability, some institutions began hosting archives of legally available software and other files, notably Stanford’s Info-Mac Archives.



Fetch has become a side project, but Matthews continues to update it, and plans a 64-bit release for macOS 10.15.

These required an FTP client, and Matthews said that ultimately led to more users outside of Dartmouth than on campus. The growth of the web didn't put the kibosh on Fetch's popularity, as early browsers were fairly terrible at FTP access and download. "To my surprise, Fetch flipped from being a tool that was mostly used for retrieving information to one that was mostly used for publishing information," Matthews said.

Fetch has always used a dog as its icon, and Matthews said his father in law created the first icon. He sent him a bitmap rendering in MacPaint that had the dog's legs in different positions, which led him to create a tiny animation for the program's cursor while the app is take action. "It was a silly addition, but has garnered more comment from users over the years than any other feature," he said. (Matthews said Fetch now sports a cursor with more frames that's drawn by Anthony Piraino of the Iconfactory.)

After spinning Fetch out of Dartmouth, Matthews said Ben Artin and Scott McGuire helped him turn it into what he called "a professional piece of software." But as time has passed, Fetch has receded from a full-time job into a side project for Matthews, who now works on

Trello (go.macworld.com/trlo) for Atlassian. He still lives in New Hampshire.

Fetch's future isn't certain, as Matthews said he has no major new releases planned. But Fetch users



keep telling him they want to use Fetch after macOS 10.15 ships in 2019, which will eliminate 32-bit apps. "I am tapping at it to see if I can pull Fetch into the 64-bit world in time for its 30th birthday in September 2019," he said.

As for Easter eggs, Matthews confesses, "Any true Easter eggs are well enough hidden that I've forgotten where they are." But, he adds, "There is a hidden preference for adjusting the speed of the running dog cursor that I think was just a left-over from testing—maybe it qualifies."

GRAPHICCONVERTER: OVER 200 FILE FORMATS SUPPORTED

Thorsten Lemke wanted a way to convert a few image file formats—Atari, Amiga, DOS, and Windows—to use on a Mac. That modest start with GraphicConverter (go.macworld.com/grcn) in 1992 has grown to include over 200 file formats in version 10, also known as GraphicConverter X.

GraphicConverter evolved from simple file conversion into a full-fledged

image editor, image file browser, batch-process manager, and metadata inspector and editor. Lemke noted that the program now includes over 200 filters for modifying images, too.

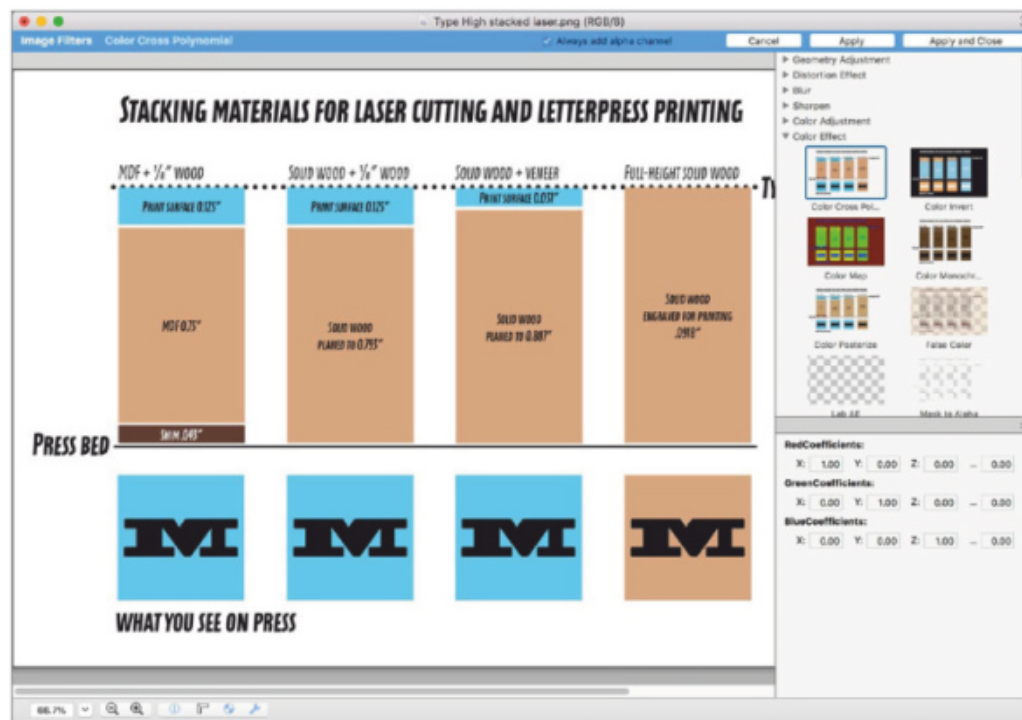
Despite all the development, Lemke said there's always a full plate of user requests for new features and other workflows. "Further development is assured," he said.

While the app has expanded in features, and Lemke's company, Lemkesoft, now maintains several software



packages, he's the primary mover. On the website, Lemke noted, "Thorsten personally answers between 200 to 300 emails from users worldwide."

He said that while he developed most of the app himself, he's relied on contract developers to handle transitions. Like most of the other long-running apps, that's meant several, including shifting the underlying coding language from Pascal to C to the current combination of Objective-C and Apple's newer Swift.



GraphicConverter has grown from a few image file-format conversions to a full-featured image editor with hundreds of filters and formats.

Lemke said after all these years, he still "likes the challenges of the new developments and techniques." That helps him get up in the morning and get to work. But, he noted, he also has to get his kids off to school: "My day starts at 5:30 in the morning." ■



The 10 best Mac games of 2018

Ring out the year with the best games.

BY LEIF JOHNSON

Whatever else you may say about 2018, the year proved that plenty of developers still take the Mac seriously as a gaming platform. I'm fond of saying that we as Mac gamers enjoy quality at the expense of quantity, and standout titles like *Subnautica* and *Pillars of Eternity 2: Deadfire*—both of which released at the same time as their PC counterparts—

serve as proof of that. Nor did I have to struggle for this list: There are plenty of new enjoyable games like *The Banner Saga 3* and *The Elder Scrolls Online: Summerset* that deliver hours of entertainment but fall a tad short of the greatness of the following entries.

Whether you're looking for blockbuster action or retro-styled platformers, this year's crop of games has many wonders to choose from.



Rise of the Tomb Raider

RISE OF THE TOMB RAIDER

Price: \$29.99 from go.macworld.com/rtdr

Rise of the Tomb Raider is easily the most graphically impressive of this year's Mac releases, to the point that I now frequently use its built-in benchmarking tool to judge the performance of MacBooks and eGPUs.

Fortunately, it's a fantastic game as well. This sequel whisks Lara Croft off to the snowy wastes of Siberia, where she hunts down the legendary city of Kitezh while finding time to rummage in plenty of tombs and solve a plethora of puzzles. And of course, Lara being Lara, the number of bullets that fly

here almost certainly outnumber the words in our favorite tomb raider's doctoral thesis. It's full of literal cliffhangers, and it's more fun than a summer blockbuster.

THE RETURN OF THE OBRA DINN

Price: \$19.99 from go.macworld.com/obra

I never wanted to be an insurance adjuster until I played *The Return of the Obra Dinn*, and frankly, I have a feeling that it overstates the appeal. It's 1807 and a ship has wandered in with a dead crew after years of being lost at sea, and it's your job to figure out what happened.

You do this, though, by whipping out a



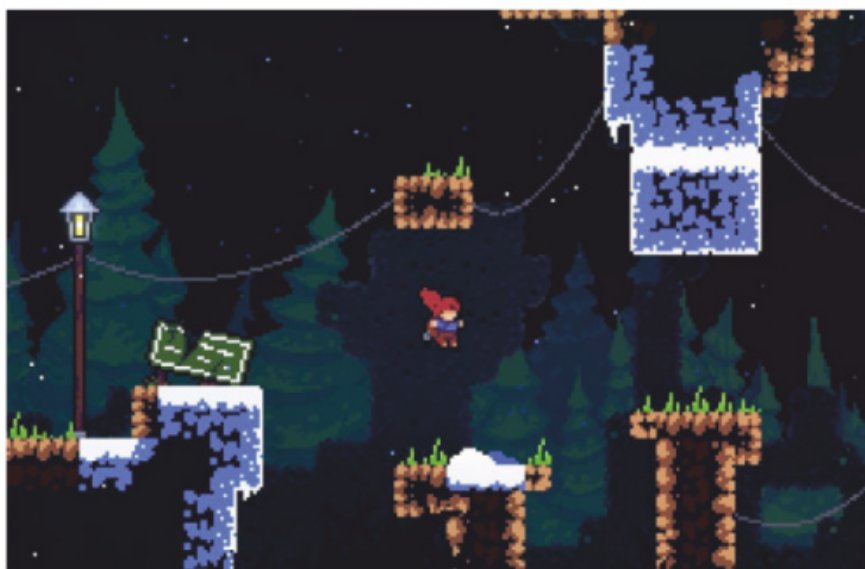
The Return of the Obra Dinn

stopwatch that shows the exact second of someone's death along with a few snippets of dialogue surrounding the moment. And, to put it lightly, that's just the beginning of the weirdness in this masterpiece of deductive sleuthing. As a special bonus for Mac users, you can change the retro interface to look as though it's running on an early 1980s Macintosh.

CELESTE

Price: \$19.99 from go.macworld.com/clst

Training to climb a mountain can take years, so I'm not surprised that this marvelous platformer about climbing a snowy peak is about as hard as climbing Everest. You're a little girl named Madeline—*Celeste* is the mountain—and you'll subject the poor thing to a thousand deaths while guiding her



Celeste

through retro-styled dead cities and menacing ridges. Thank goodness the phenomenal soundtrack makes the pain more bearable.

But *Celeste* is never so rough that its challenges feel sadistic; on the contrary, it lifts you up. Madeline's journey to the summit is an allegory for her personal betterment as she rises above the surrounding adversity toward the stars, and by the end, her triumphs become your own. Excelsior, indeed.

PILLARS OF ETERNITY 2: DEADFIRE

Price: \$49.99 from go.macworld.com/ddfr

The first *Pillars of Eternity* clung a tad too tightly to the fantasy RPG traditions of isometric Infinity Engine games like *Baldur's Gate*, but *Pillars of Eternity 2:*

Deadfire sees the series finding a voice of its own. It's an improvement in almost every respect.

This time around, there's a god tromping around the countryside like the Stay-Puft Marshmallow Man from *Ghostbusters*. As for you, you spend a lot of time in a boat exploring a tropical archipelago where the local politics are as



Pillars of Eternity 2: Deadfire

difficult to navigate as the seas. Multiclassing enriches the real-time with pause combat, and the story mercifully sidelines the glum of its 2015 forebear. It's a fiery reminder that old-school role-playing is anything but dead.

SUBNAUTICA

Price: \$24.99 from go.macworld.com/sbnt

Survival games tend to focus on living off the land, but not *Subnautica*; in fact, there's not a shovelful of dry dirt in sight. You're the sole survivor of a starship that crashed on a planet enveloped with an

ocean without end, and all you've got at your disposal is a damaged escape pod. Never before has "watered down" sounded so hardcore.

But gosh, it's lovely. The wholesale shift to the real world down under revitalizes the survival genre in ways unmatched by rival games with

dinosaurs and pirates. And if you don't want to rough it so much? Set *Subnautica* to exploration mode and bathe in the beauty. It's a reminder that one of the most alien landscapes imaginable waits just beyond our beaches.



Subnautica



Dead Cells

Dead Cells kicks you back all the way to the beginning when you die, and then the levels randomly rearrange themselves with new enemies and rooms when you revive. It's not as mean as it could be, though, as it lets you keep the upgrades you earn along the way.

DEAD CELLS

Price: \$24.99 from go.macworld.com/ddcl

The name *Dead Cells* works on so many levels. For one, you're literally playing as a mass of cells that reanimates the bodies of dead prisoners in order to escape a prison. For another, the cells of that dungeon are stuffed with dead bodies, giving you plenty of options to choose from when you fail. And fail you will. Unlike its inspirations *Metroid* and *Castlevania*, though,

CUPHEAD

Price: \$19.99 from go.macworld.com/cphd

There's a boss fight near the start of *Cuphead* that serves as a metaphor for the game as a whole. When you first see it, it's



Cuphead

an animated flower that's adorable and inviting. It's got rosy cheeks and a sly smile. But then it morphs into an avatar of death, its petals resembling crown of flames and its teeth looking larger than small houses.

Cuphead, which can be played solo or in co-op, wants you dead. It's so hard that you may not even finish. Even so, it's worth enduring the pain this intense platformer dishes out as each Fleischer Studios-inspired boss fight is more creative and outlandish than the next. It's punishment with panache, and somehow that makes it appealing.

TOTAL WAR: WARHAMMER 2

Price: \$59.99 from go.macworld.com/twr2

Total War: Warhammer II is a welcome reminder that the *Warhammer* series can back away from its most beloved races and conflicts without losing its soul. In fact,



Total War: Warhammer 2

this is one of the most enjoyable strategy games in years. The emphasis here isn't so much on orks but on elves and anthropomorphic rats and lizards who rush at each other's throats in their struggle to control a gigantic purple tornado at the heart of the world. Sound outlandish? Good. That's *Warhammer* for you.

But it's not just about personality—there's also some great real-time strategy in play here with four distinct races that are all fun to play. And at least for the *Total War* series, the presentation of the story has never been better.

RIMWORLD

Price: \$34.99 from go.macworld.com/rmwd

If you think being marooned on a desert island is rough, imagine being a space explorer who's marooned on a planet that's still stuck in its Middle Ages. That's

the concept behind *RimWorld*, which sees you struggling to maintain a society while scrambling to repair your damaged ship so you can return home.

Raiders may attack. A lightning strike could ruin years of hard work. Some settlers go nuts and need to be cast out.

Indeed, unlike many other resource management sims, the settlers have distinct personalities here and motivations, which adds a necessary dose of humanity to a genre that tends to wallow in abstractions.



RimWorld

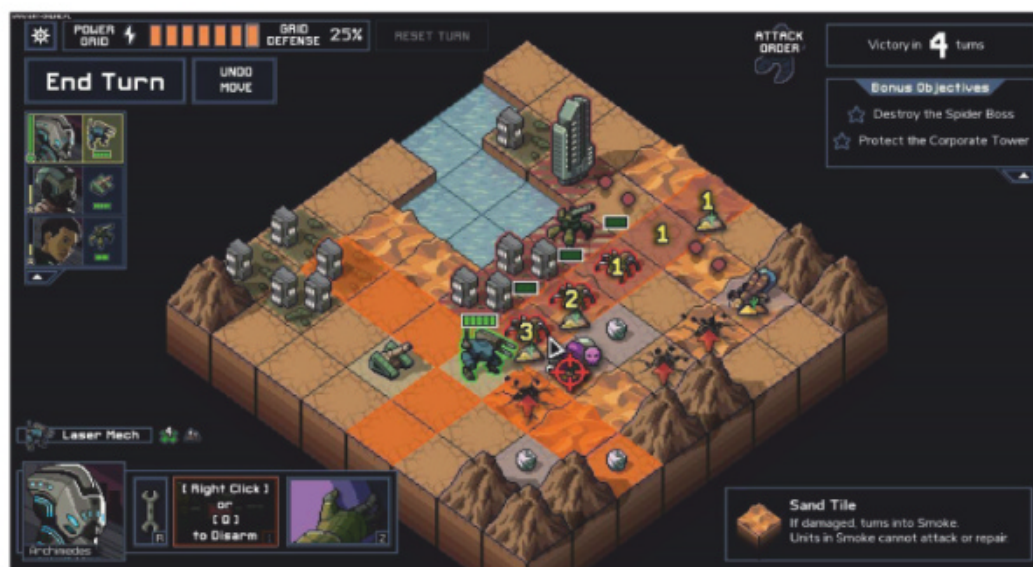
INTO THE BREACH

Price: \$14.99 from go.macworld.com/i2br

If you're going to save the world from monsters by using gigantic mechs as in *Pacific Rim*, you're going to want to make sure you don't also trash our cities in the process. That's the idea behind *Into the Breach*, a chess-like tactical RPG from the same team responsible for the beloved roguelike starship simulator *FTL: Faster Than Light*.

It's tough, but saving Earth

from squids the size of Godzilla probably should be. But the procedurally generated campaign is never boring. Once you figure out how to thwart a monster's attacks by studying its telegraphed moves and responding with the best of the three mechs at your disposal, you happily head into the breach again and again. ■



Into The Breach



Apple should drop Intel for AMD

A transition to ARM for macOS will take years. In the meantime, AMD should supply Apple's x86 hardware.

BY JASON CROSS

Rumor has it that Apple is planning to produce its own CPUs and GPUs for Macs (go.macworld.com/incp). Those T2 processors (go.macworld.com/prt2) we have today are just a tiny first step—the big leap is to take something like the A12X and build a MacBook around it. It makes sense from the perspective of both power-to-performance ratio and a cost-to-

performance ratio. Perhaps more importantly, it puts Apple fully in control of its whole platform, and allows the company to innovate in ways it can't when it cedes the very heart of its computers to other companies.

For these reasons and more, I think it makes sense to begin transitioning macOS to ARM and for Apple to produce computers with its own CPUs and GPUs

inside. But that transition will take years. While that's going on, Apple should kick Intel to the curb and go all-in with AMD.

BETTER PERFORMANCE, LOWER POWER

The consumer chips AMD will ship this year—new third-generation Ryzen chips based on the Zen 2 core and the Ryzen Threadripper high-end desktop and workstation chips with the same technology—are going to do more than give Intel a run for its money. The current generation of these chips already meet or beat Intel in nearly all tasks except for high-end gaming. And let's face it, as much as I love Mac games, gaming is just not a strong market for the Mac.

We've only had small sneak peeks at the new 7nm products AMD is shipping this year, but the company is crushing it. During its CES keynote, AMD showed an early engineering sample of the new third-generation Ryzen chip, running at a reduced speed. Even so, it beat out a Core i9-9900K in a Cinebench test (go.macworld.com/i9ts). That's an impressive feat, considering that both chips had the same 8 cores and 16 threads.

But when AMD's Lisa Su held up the Ryzen chip that was demonstrated, the layout was conspicuous. It looks like there is deliberate room left for a second 8-core, 16-thread “chiplet,” which makes me think

that the company played it close to the vest in showing only its 8-core version. If AMD can match or beat Intel core-for-core, and can ship a 16-core, 32-thread regular desktop CPU, they're almost certainly going to take the overall performance crown, despite the improvements Intel will make this year (go.macworld.com/10il).

AMD's CES demo was significant in another way, too. The third-generation Ryzen test system used about 25 percent less overall power than the Intel system. If the final chip is clocked a bit higher, that gap may narrow, but it's a huge deal that AMD is matching or exceeding Intel's performance with early silicon at significantly lower power draw.

Now scale that up to a third-generation Threadripper chip, a perfect match for the upcoming Mac Pro. Just as with the first two Threadripper generations, we can expect those to be similar to AMD's Epyc server chip line, which means we're looking at up to 64 cores and 128 threads.

Can you imagine a Mac Pro shipping near the end of this year with up to 64 cores and 128 threads, with per-core performance on a par with Intel's latest and greatest?

Oh, and AMD is ahead of the game with PCI Express 4.0 support, too. Apple loves to put tons of fast I/O in its Pro desktop computers, so that's just another feather in AMD's cap.



The iMac Pro would be better off with 2nd-gen Threadripper inside. Imagine the leap the 3rd-gen version would bring.

PRICED TO MOVE

Apple has never been a price leader, but it certainly doesn't want to pay more for its CPUs than it has to. Ever since the launch of Ryzen in 2017, AMD has offered exceptional performance-per-dollar. Even its highest-performing desktop chips (which are often faster than Intel's in many tasks) can cost hundreds of dollars less.

Naturally, a huge and prestigious manufacturer like Apple doesn't pay street prices. But it's hard to imagine AMD wouldn't be able to undercut Intel's pricing, allowing Apple to pass some of those savings on to customers. AMD is already the sole provider for Mac GPUs (in those Macs that have discrete graphics), and it would be a huge "get" to pull Apple's CPU

business away from Intel, even if it's just on the desktop. The boost to AMD's stock price alone would probably make it worth taking almost no margin at all.

EASY ON DEVELOPERS

It could be worrisome to change CPU vendors...why bother if it's just going to be a few years before

Apple has its own CPUs inside all Macs? But a switch like this one has more in common with switching from Nvidia to AMD. For most developers, it would be all but invisible.

The broad compatibility between Intel and AMD CPUs means that developers wouldn't have to do a lot of work. In fact, most apps would "just work" with no changes at all. Developers who want to really optimize for AMD's architecture will find lots of familiar tools to do so. In fact, some of AMD's best optimized code is found in the Linux community, which is a smaller hop to macOS than Windows. Compared to making an app run on ARM, making the entire current macOS catalog work on AMD's Ryzen processors would be a cinch.

FAN CLUB INCLUDED

Apple seems more interested in becoming a services company than selling a lot of desktop computers, but it doesn't make Macs for nothing—it's still important to move some hardware. In fact, Mac sales have been stagnant lately, and could use a bit of a boost. In the long term, the innovation that can come from Apple producing its own Mac processors is the best way to address that.

In the short term, it never hurts to have a bunch of rabid fanboys who are psyched to buy your computer because it uses their favorite company's processors and GPUs. There are Intel fans and there are AMD fans, but the AMD fanbase has the sort of ride-or-die, "always the underdog" attitude that should fit right in with Apple. If you

don't think an AMD fan is going to consider buying their first Mac just because it has a Ryzen Threadripper chip inside, you haven't met an AMD fan.

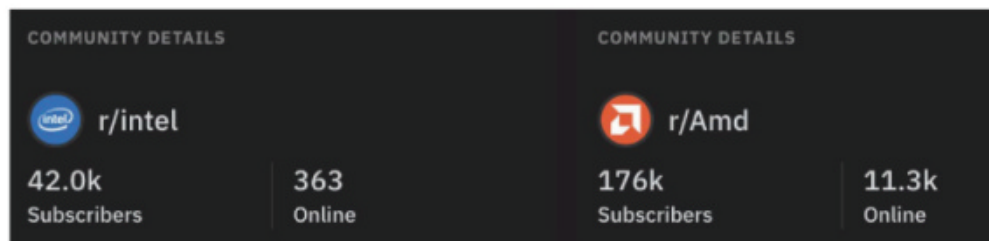
ARM-BASED MACS WILL TAKE A WHILE

The performance of the A12X in the iPad Pro is already good enough for a thin-and-light MacBook, but it's several times slower than an 18-core iMac Pro's Intel processor from a year earlier. Then there's GPU performance, memory bandwidth, tons of PCI Express lanes...in short, Apple is pretty close to building all the components it needs for a great thin and light MacBook, but years away from the sort of big high-power chips needed for future iMac Pro and Mac Pro desktops.

That's okay. The ARM Mac transition, if it's going to happen, should start with thin and light laptops first and move up the product stack from there. Not only are Apple's current A-series chips



Apple loves fast I/O. Hey look, AMD will deliver PCIe 4.0 first!



A passionate fanbase is when you have a fraction of the market share but more than four times as many subscribers to your subreddit.

much closer to meeting the performance and feature expectations of those laptops, but the inevitable compatibility issues will be less of a problem.

The thin-and-light Mac laptops—the MacBook and MacBook Air—are consumer devices. People use them to browse the web, check email, listen to music, watch videos, and maybe do a little light content creation (modest photo editing and the like). If macOS transitions to ARM, it will require developers to do a lot of work re-writing apps, but the consumer needs of the MacBook Air set can be almost entirely met by Apple’s built-in apps. With a few exceptions, consumers can switch apps fairly easily; if their favorite note-taking app does not have an ARM-compatible version, they can try another.

But high-end Mac desktops—the iMac Pro and Mac Pro—are made for people who do big video editing jobs, 3D modeling and animation, and high-end image editing (like movie posters). The pro apps they rely on are updated frequently to add new features, but

their company to buy it first, and then they have years’ worth of legacy data and libraries to contend with.

I think Apple should transition the Mac line to ARM, and should start with the MacBook and MacBook Air. As Apple develops ever bigger and more powerful chips, it can replace x86 processors with its own ARM chips in the MacBook Pro, then the iMac, then the iMac Pro and Mac Pro. And in the years it takes the company to develop those chips and ship those products, pro-level application vendors will have all the tools and time necessary to transition their software.

So, even if the transition to Apple processors in Macs starts this year and happens quickly, it will probably take a few years before the entire lineup has an Apple processor inside. During that time, the company should look to AMD to meet its x86 processor needs. And if Apple doesn’t transition to ARM, all the more reason to get behind the company making the most exciting x86 desktop processors. ■

major shifts to a new architecture can take years. And customers can’t easily jump to a competing product—they may have to convince



Up, down, sideways: Apple's personnel changes point to its priorities

Recent stories about Apple personnel changes let us glean just a little bit about what's happening inside the company.

BY DAN MOREN

Back in December, I wrote about what we could glean from Apple's expansion into new physical locations in the U.S. (go.macworld.com/jbad). While studying the company's personnel moves may

cross a bit into reading tea leaves, you can often divine at least some big picture indications from where the company is putting its resources. Make no mistake, Apple's biggest and most significant resources are its personnel.

Granted, those personnel moves are happening on a consistent basis, though they don't always rise to the level of reported news. They may not always be as splashy as expanding campuses, but there are plenty of hirings, firings, and reorganizations that can point to how Apple is adjusting its operational priorities. Over the last few weeks alone, for example, there have been several stories about Apple personnel changes; look closely enough and you can start to get a clearer indication of where the company's interests lie at present.

EXECUTIVE FUNCTIONS

One area that got a lot of attention in those Apple's job openings in December was Siri. The company has been stressing the importance of its machine-learning technologies for some time, and that was brought home in a more tangible way when Apple hired John Giannandrea in April of last year. Giannandrea had previously served as chief of search and AI for Google, and his profile rose quickly at Apple: at the time of his hiring, he reported directly to Tim Cook and headed up all machine learning and AI efforts. By July he'd been put in charge of Core ML and Siri as well, and at the end of last year—less than months after he first came onboard—he was added to Apple's executive team (go.macworld.com/jngn).

Apple doesn't add people to its executive team very often, and even then it's mostly when the company is filling existing roles. The last time someone joined the top ranks of the executive team was senior vice president of hardware technologies Johnny Srouji in 2015. Given Srouji's position as the head of Apple's custom silicon efforts, it's no surprise that he was considered a strategic enough asset to merit a spot in the company's top echelon.

The fact that Giannandrea has now been added to the ranks speaks volumes about Apple's belief that machine learning, AI, and Siri will be instrumental to the company in the foreseeable future, on a par with custom silicon, services, and retail,



John Giannandrea, Apple Senior Vice President, Machine Learning and AI Strategy.

all of which have been critical to Apple's success over the last several years.

QUESTIONS OF BATTERY

If you're placing bets on who might be the next person to show up on that list, you may not have to look very far at all. A recent Bloomberg report (go.macworld.com/smbe) said that late last year, Apple brought aboard Soonho Ahn to head up its battery technology program. Ahn was previously a senior vice president at Samsung SDI, a division of the conglomerate that develops existing and new batteries. (And, unsurprisingly, the biggest supplier of batteries to Samsung's own smartphones.)

Batteries, while not perhaps among



Soonho Ahn left Samsung to join Apple to lead the company's developments in battery technology.

the most sexy technologies, are as important to Apple as custom silicon. After all, iPhones, iPads, Apple Watches, MacBooks, and even AirPods all rely on batteries, without which they would be useless bricks of glass, metal, and plastic. And though power management and batteries have improved over the past decade or so, we're still relying on the same basic technology.

Any way that Apple can improve its devices' battery efficiency would be a major coup and give it a potentially significant competitive advantage. Given that Ahn's area of expertise at Samsung SDI was apparently "next-generation batteries and materials innovation," it's pretty clear why Apple hired him away. Mix in the company's acquisition of several hundred experts in power management chips from Dialog Semiconductor last year (go.macworld.com/bgmw) and Apple's obviously pushing hard in this direction.

CAR-RY ON WAYWARD SON

While staffing changes at the top of Apple's organization tend to get a lot of attention, changes among the company's rank and file are often kept under wraps, falling into the realm of speculation and sketchy report.

Recently, however, there was a rare exception: a CNBC story (go.macworld.com/prtn) reported that 200 members of

Apple's autonomous driving project were "dismissed," a development that was officially confirmed by the company.

Apple's statement on the matter refers to some personnel also being moved elsewhere in the company, including to machine learning teams, but such a massive adjustment on a program that has already reportedly seen some substantial changes (go.macworld.com/sdcr) would seem to further indicate a shift in priorities, if nothing else.

A self-driving car is surely an ambitious project—perhaps the most ambitious that Apple has ever taken

on—and questions have swirled about what the end product might look like ever since the first rumors of the program's existence began. Most recently, Cook has spoken of developing autonomous systems, with a car of its own not being a foregone conclusion for the company.

Certainly, this autonomous systems project remains an area of intense focus for the company—it has been said to have a staff of more than 2,000, so a departure of even 200 still means that plenty of people are hard at work on the project, whatever form it might ultimately take. ■





VIDEO-EDITING SOFTWARE

ADOBE PREMIERE RUSH CC: CONSUMER VIDEO EDITOR MAKES FAST WORK OF CREATION AND SHARING

BY JACKIE DOVE

Premiere Rush CC (go.macworld.com/prcc), a brand-new video app from Adobe, emphasizes speed in the creation and sharing of online video targeted to the social media crowd.

Unlike Premiere Pro, Premier Elements, and Premiere Clip (Adobe's other desktop and mobile video apps), Rush operates across devices with nearly identical desktop and mobile versions that can save all footage in the cloud. Your movie is accessible anytime, anywhere via an auto sync feature that you can enable if you choose, or you can save your video locally. Rush, powered partly by Adobe's Sensei artificial intelligence framework, is compatible with the latest version of Premiere Pro.

Rush is super simple to use. You can shoot video from within the app on your mobile device or you can import video from your Camera Roll. Either way, your

movie shows up in Rush's project panel. As you choose which video, audio, and images to include, each item shows up in a storyboard layout at the bottom of the window, letting you visualize and adjust the sequence of assets in your project.

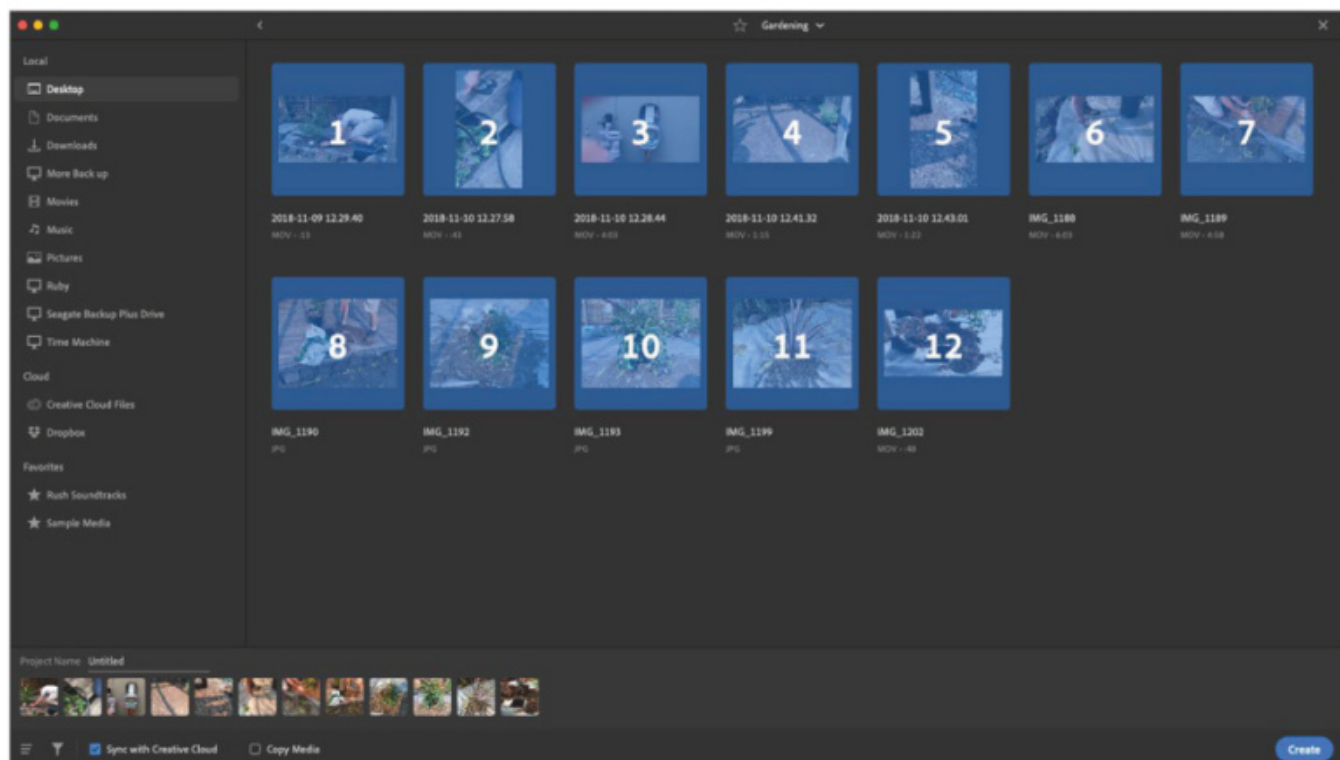
EASE OF USE

Rush is easy to learn, and it gives you plenty of control over your creations with its motion graphics templates, audio features, and ability to tap into your Creative Cloud library and Adobe Stock. You can capture, trim, change clip sequence, color-correct, record voiceovers, and add color filters and text

overlays. Adobe builds in four video and three audio tracks. You can polish your audio and choose from an assortment of animated motion graphics titles and a few essential transitions.

The interface is intuitive enough that if you do a bit of clicking around, all the features are exposed, though a built-in tutorial is worth taking a few minutes to go through.

You're not going to make a feature film with Rush, but you can quickly throw together a respectable travelogue, commentary, or instructional video in a matter of minutes and adjust it to any social media output format you need. With



You can access project assets from any device or online source, such as your hard drive, Creative Cloud, Dropbox, Google Drive, or iCloud.

the click of the mouse, you can alter your aspect ratio from portrait to square to landscape and back again. Rush does most of the work of providing one-click social sharing complete with export optimization options for YouTube, Facebook, Instagram, and more, making posting quick and easy.

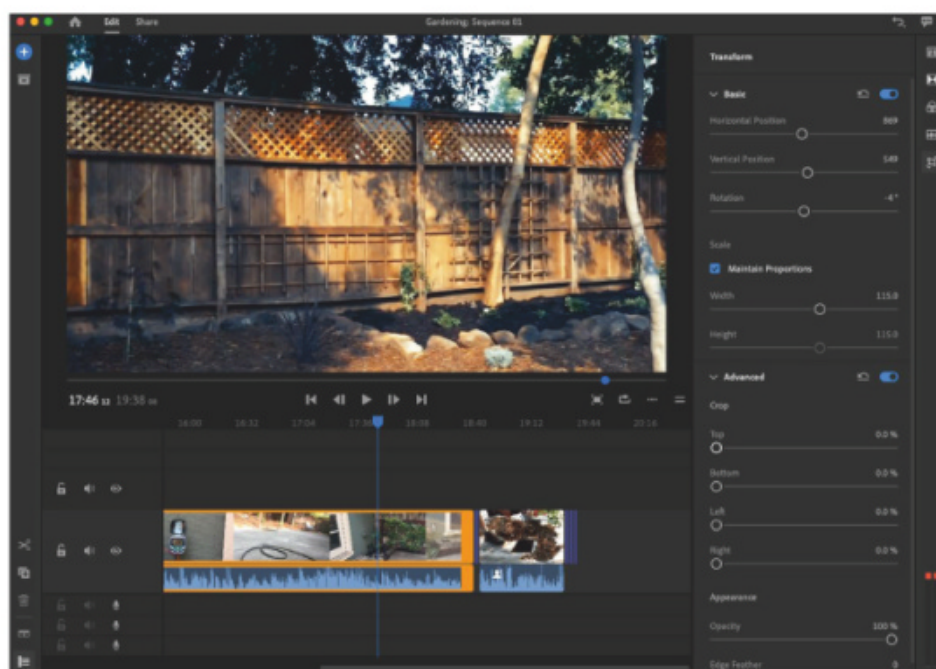
VIDEO CREATION TOOLS

Video output with Rush can look quite professional as the program features a selection of motion graphics and audio mixing capabilities. Nearly a dozen color grading presets impart different looks and moods to your movie.

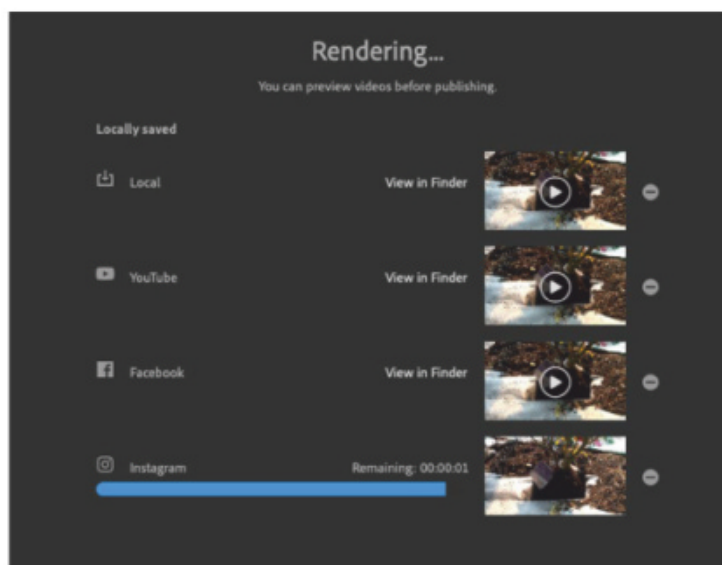
The app lets you adjust exposure, contrast, shadows, temperature, vibrance and more, and built-in tools let you add effects like Faded Film, Sharpening, and Vignette. You can combine these elements into a

custom preset.

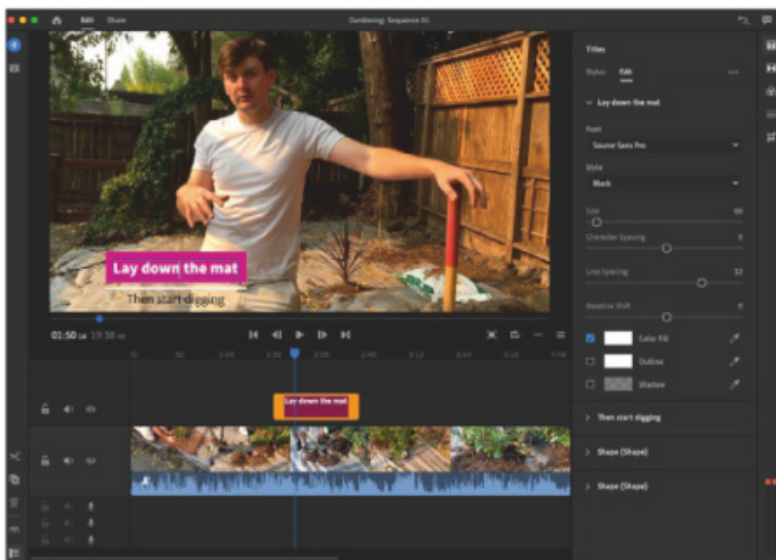
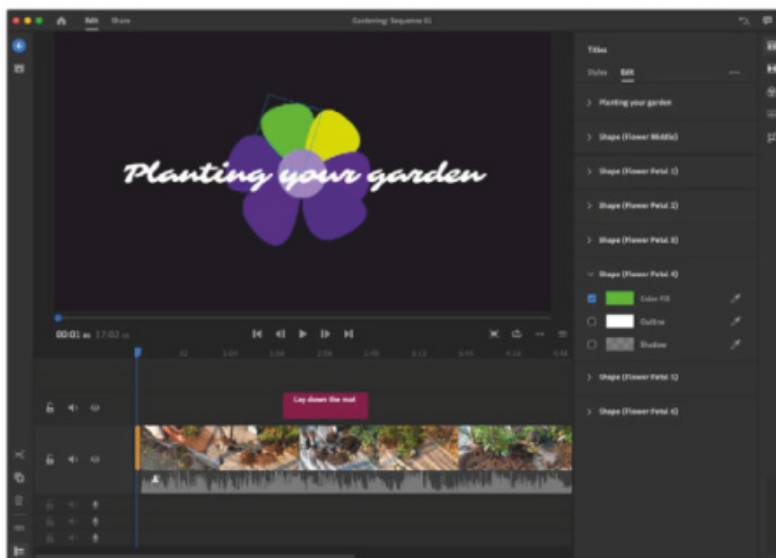
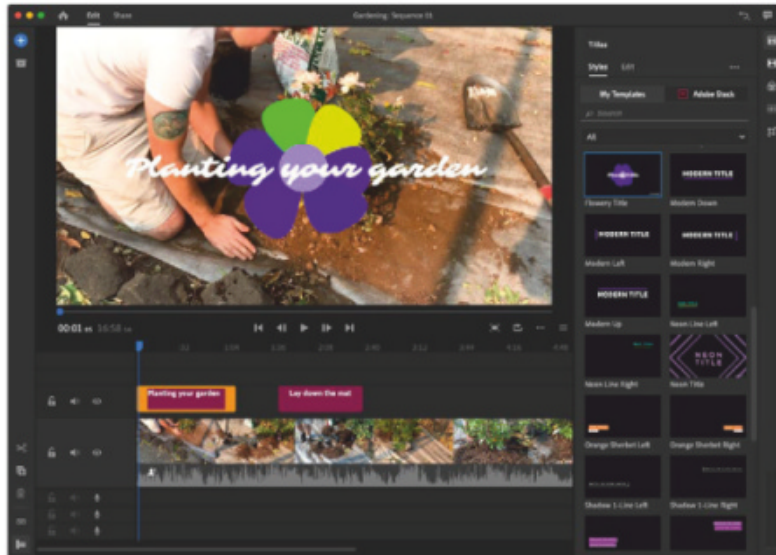
The app also comes with a small number of royalty-free soundtracks that you can import for use in your video, though you can also use your own music or record a voiceover. You can't directly adjust the wave forms to change volume



Color presets give your movie just the right overall look.



With one click, you can share to various social media platforms—just make sure you're already signed in.



nor can you detach the embedded audio. But you can adjust or mute the volume, balance the sound, lower echo and background noise, and emphasize voices. An auto ducking feature can automatically lower music volume when people are speaking.

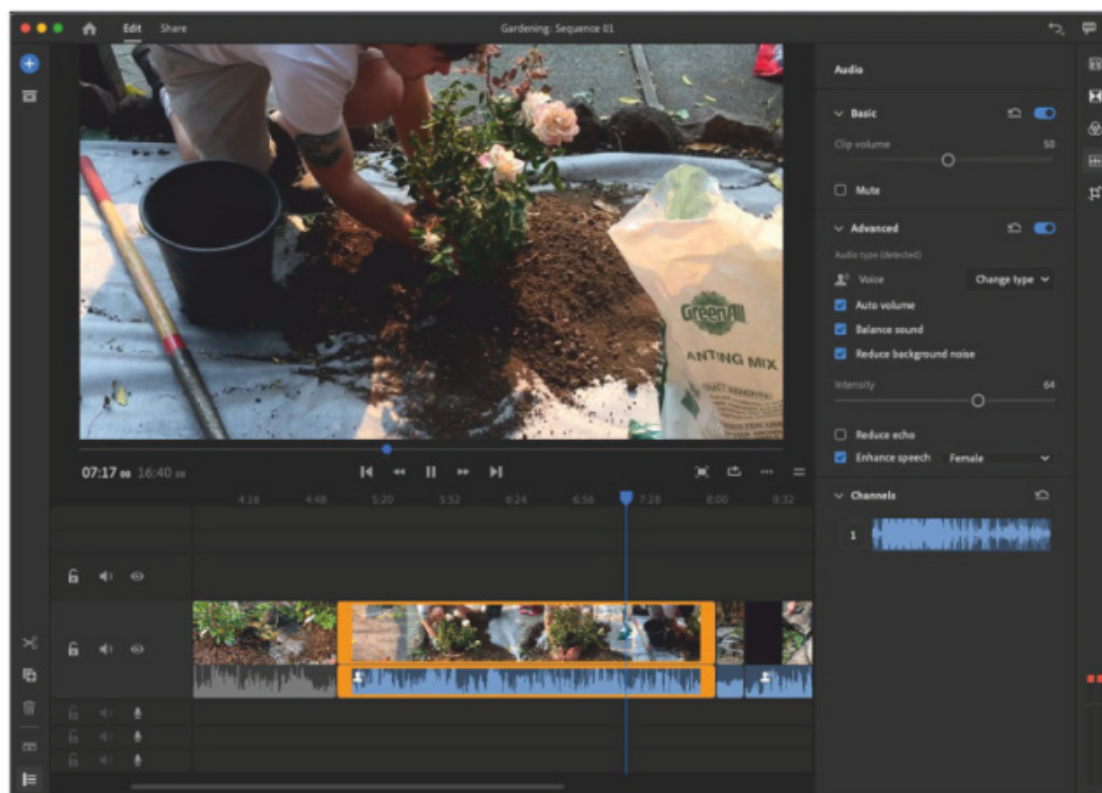
WHAT'S MISSING

As a debut product, some Rush features seem spare. There are only three built-in transitions, albeit the most commonly used ones, but it would be nice to see more added in the future. Video features that are popular in other consumer video apps, like green screen, clip speed adjustments, freeze frame, and motion tracking are absent from Rush's debut version.

PERFORMANCE

Rush can be a bit slow on the uptake in letting you view video previews, both on the desktop and within mobile devices.

Premiere Rush CC comes with built-in, customizable motion graphics templates, but you can also download and adjust additional ones from Adobe.



Rush has a limited number of audio controls, but they are the most useful ones.

When searching for videos to use in a project, it can take some time for the previews to show up. Rendering was on the slow side too, while the program offers an option to pre-render to snap up video playback.

BOTTOM LINE

Adobe Premiere Rush CC has a lot going for it, especially in a world of instant video posting to social networks. Including it in the Creative Cloud subscription (\$52.99 per month) and in the



Adobe Premiere Rush CC

PROS

- Easy to use and learn.
- Automatically syncs between desktop and mobile.
- Easy switching between square, landscape, and portrait orientation.

CONS

- Slow performance.
- Expensive for a stand-alone subscription.
- Lacks popular consumer features like green screen and freeze frame.

PRICE

\$9.99 per month, \$120 per annum

COMPANY

Adobe

individual Premiere Pro subscription (\$20.99 per month) makes sense, but an individual subscription costing \$9.99 per month seems steep. If you think Rush can solve your problems, try out the free Starter Plan, which gives you three exports and 2GB of server space. For most video creation and sharing on the Mac, without a Creative Cloud connection, social media moviemakers can always rely on the free iMovie and iMovie for iOS as a great choice. ■



STORAGE DEVICE

SONY PSZ-RA4T PROFESSIONAL RAID: CLEVER PORTABLE AND RUGGED DESIGN, PLUS THUNDERBOLT AND USB

BY JON L. JACOBI

Designed with on-location video production in mind, Sony's PSZ-RA4T Professional RAID is not the fastest RAID box we've tested, but it's certainly fast enough. Made for travel, the PSZ-RA4T is thoroughly ruggedized and especially easy on the eye.

Add the ability of this dual-drive unit to function via Thunderbolt 2 or USB 3.1 on your cohort's or client's Windows machine as well as your Mac, and you've got a winner.

DESIGN AND FEATURES

The PSZ-RA4T has enough deft design flourishes that leave no doubt that folks who work with such products supplied more than a little input. Or there's simply

an especially brilliant and practical designer at Sony. Kudos to the company, whatever the scenario.

The silicon jacket surrounding most of the PSZ-RA4T is the most salient evidence of this. It's considerably softer than the rubber you'll find on some "ruggedized" hard drives—softer absorbs shocks better, so that's a good thing. The jacket can be removed and the case opened for drive replacement.

The PSZ-RA4T also sits equally comfortably in both vertical and horizontal orientations. The latter position provides a wider stance that's more stable, and though the unit is shock-resistant (internal dampening is provided), the fewer the falls the better. (We're still talking about the general relative fragility of hard drives here.)

The front of the PSZ-RA4T has an attractive but not overly distracting green-ringed power button and blue activity light. With this drive being used in photo or video studios, not being a distraction is good. The cleverly-integrated handle is made of the same soft silicon as the jacket, and is extremely comfortable and offers a better-than-average grip.

The back of the PSZ-RA4T sports two Thunderbolt 2 ports, as well as a USB 3.x type B connector. There's a RAID select (0/striped, 1/mirrored, JBOD) button as well as a commit/confirm button that will switch

RAID modes (note that switching modes will erase data).

If you want to use the PSZ-RA4T with a computer that sports Thunderbolt 3, you'll need an adapter. I recommend Apple's Thunderbolt 3 (USB-C) to Thunderbolt 2 Adapter (go.macworld.com/t3t2), as it can also be used to attach Thunderbolt 3 devices to older Thunderbolt 1/2 ports. Some don't allow this newer-to-older compatibility.

The drive also has RAID mode lights, duplicate power and activity lights (another nice touch), and of course an AC jack. The latter warrants praise as it features a very snug and weather-resistant fit. Not waterproof but less prone to shorting from the odd sprinkle. Sony really didn't miss a trick.

The PSZ-RA4T arrives formatted in a striped RAID 0 array for maximum performance, which is roughly twice what you'll see in mirrored RAID 1. It's quite likely you will want to use RAID 0 for the performance, especially if you work with modern 4K and 8K video. Just be aware that RAID 0 offers no redundancy and suffers two failure points. Keep the drive backed up.

With hard drives now available in up to 14TB capacities these days, it's a little surprising that the PSZ-RAXX line tops out at "only" 12TB (two 6TB drives striped in RAID 0). More modern and capacious hard

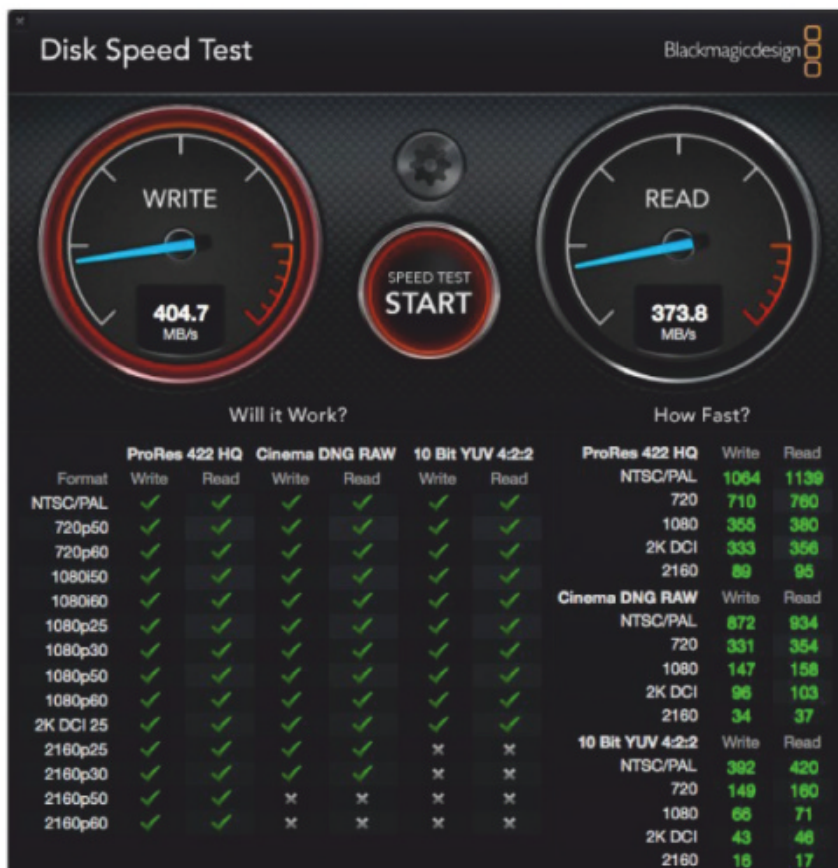
drives such as Seagate's 14TB IronWolf Pro (go.macworld.com/iwpr) and WD's 12TB Gold (go.macworld.com/12gd) are faster, so the unit might grab better scores in terms of sustained throughput, not to mention providing up to 28TB of capacity.

As it is, on Amazon the 4TB PSZ-RA4T was listed for \$379, the 6TB PSZ-RA6T for \$452, the 8TB PSZ-RA8T for \$600, and the 12TB PSZ-RA12T for just over \$700. This means, as with all things in the Apple universe, you're actually paying more than you should for the upgrade, albeit relatively little in this case.

My only true complaint about the PSZ-RAXX is the run-of-the mill, three-year warranty. You're paying a premium for this enclosure and it says "Professional" in the title. A five-year warranty would be more appropriate.

PERFORMANCE

The PSZ-RA4T's performance was pretty much on target across both Thunderbolt 2 and USB 3.1 Gen 1 buses, falling just short of Sony's claimed 440MBps over the former and registering over 300MBps on the latter.



This is only partially indicative of the PSZ-RA4T's performance. It was tested on an older Core i7-3770 iMac. With a newer Mac, it might be faster. With a Thunderbolt 3 adapter, though, it would be about the same.

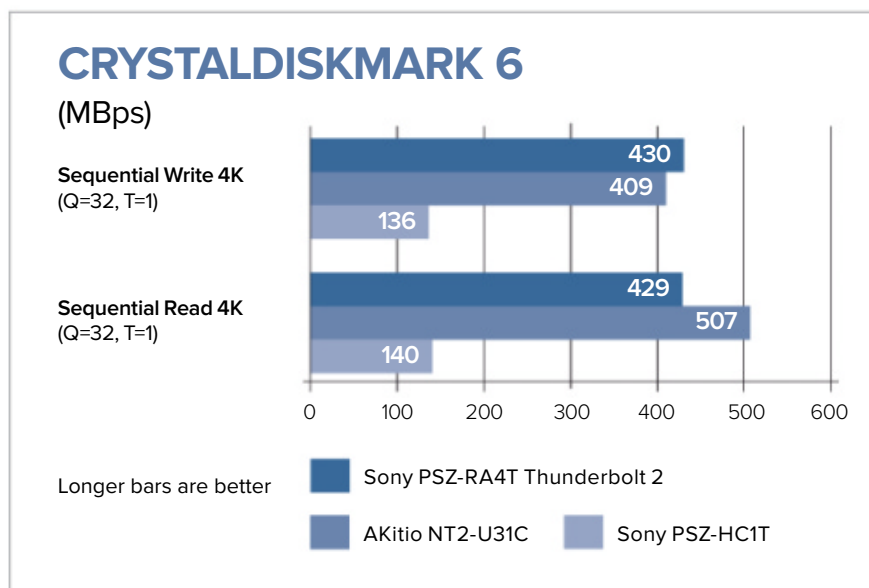
Note that the Blackmagic Design Disk Speed numbers shown are from a late 2012 iMac with a Core i7-3770. With a newer Mac, you'll likely see the 440MBps Sony claims.

I also tested the PSZ-RA4T on *PCWorld's* storage test bed. For some reason CrystalDiskMark 6 did not like the PSZ-RA4T over the USB 3.1 Gen 1 bus, rating the drive's speed at around 150MBps in a straight sequential 32GB read/write. As this wasn't born out by our

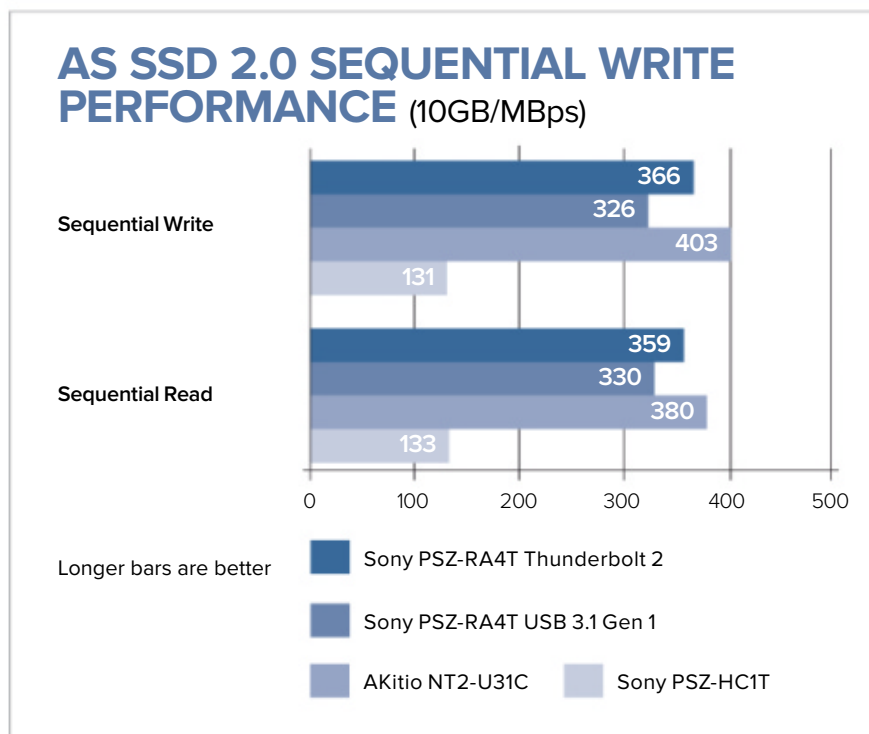
real world copy tests over USB, I chalked it up to an incompatibility or bug, and left those numbers out.

AS SSD's sustained throughput numbers are often considerably higher than CrystalDiskMark's, so these results are no surprise. Note that the *PCWorld* test bed runs on a sixth-generation Core i7, rather than the fourth-gen that the Disk Speed test was run on.

In our 48GB copy tests, the PSZ-RA4T proved very facile with large files—not so much with smaller ones. However, the latter was almost entirely due to the fact that the PSZ-RA4T ships formatted to exFAT and the Akitio NT2-U31C was formatted to NTFS. Small file write performance is a known weakness of the exFAT file system, however, as it's also the only format that's natively compatible across all platforms, and the PSZ-RA4T is likely to be used that way, I tested it as it shipped.



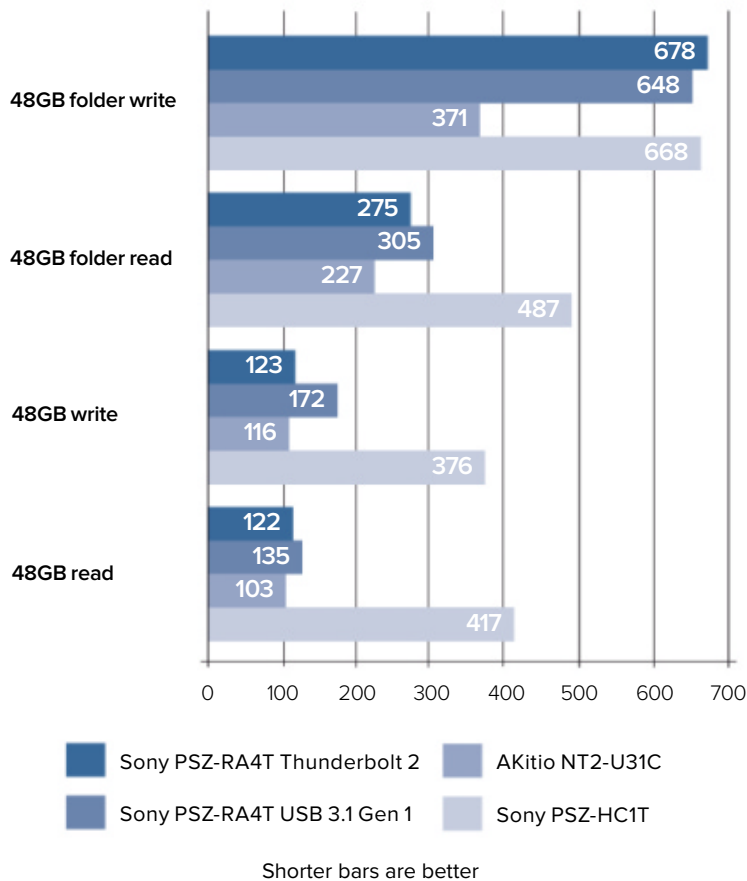
CrystalDiskMark indeed rated the PSZ-RA4T at over 400MBps—using Thunderbolt 2.



According to AS SSD, the Sony PSZ-RA4T's throughput lands right where it should—for the most part. It's only bested by the Akitio NT2 U31C which had two very fast 14TB Seagate hard drives striped in RAID 0. The other Sony is a single hard-drive unit.

48GB COPIES

(Seconds)



The NT2-U31C being rigged with two very fast 14TB Seagate IronWolf/BarraCuda Pro drives didn't hurt its cause either. Those drives are each capable of 250MBps transfer speeds.

In the end, the PSZ-RA4T is easily fast enough for most purposes, assuming you use it via Thunderbolt 2. It's quick over USB, but perhaps not

The PSZRA4T and the other Sony drive didn't do particularly well with the 48GB set of files and folders, though it was ace with the single large 48GB file.

quick enough for capturing some of the high-definition, high-bit-depth video formats used these days.

Note that if you'd rather use APFS, HFS, or NTFS, Paragon Software (go.macworld.com/prgn) makes drivers that allow you to read and write these systems on either macOS or Windows. They've proven 100 percent reliable in my use and suffer little to no degradation in performance.



Sony PSZ-RA4T Thunderbolt 2/USB RAID

PROS

- Stylish, rugged design.
- Works over Thunderbolt 1/2, or USB.

CONS

- Pricey for the capacity.

PRICE

\$379

COMPANY

Sony

BOTTOM LINE

Whatever Sony's PSZ-RA4T lacks in performance—which isn't much—is more than made up for by clever, rugged, and attractive design. I'd like to see more capacious models and a five-year warranty, but this is still a very attractive product from Sony that I have no qualms recommending. ■

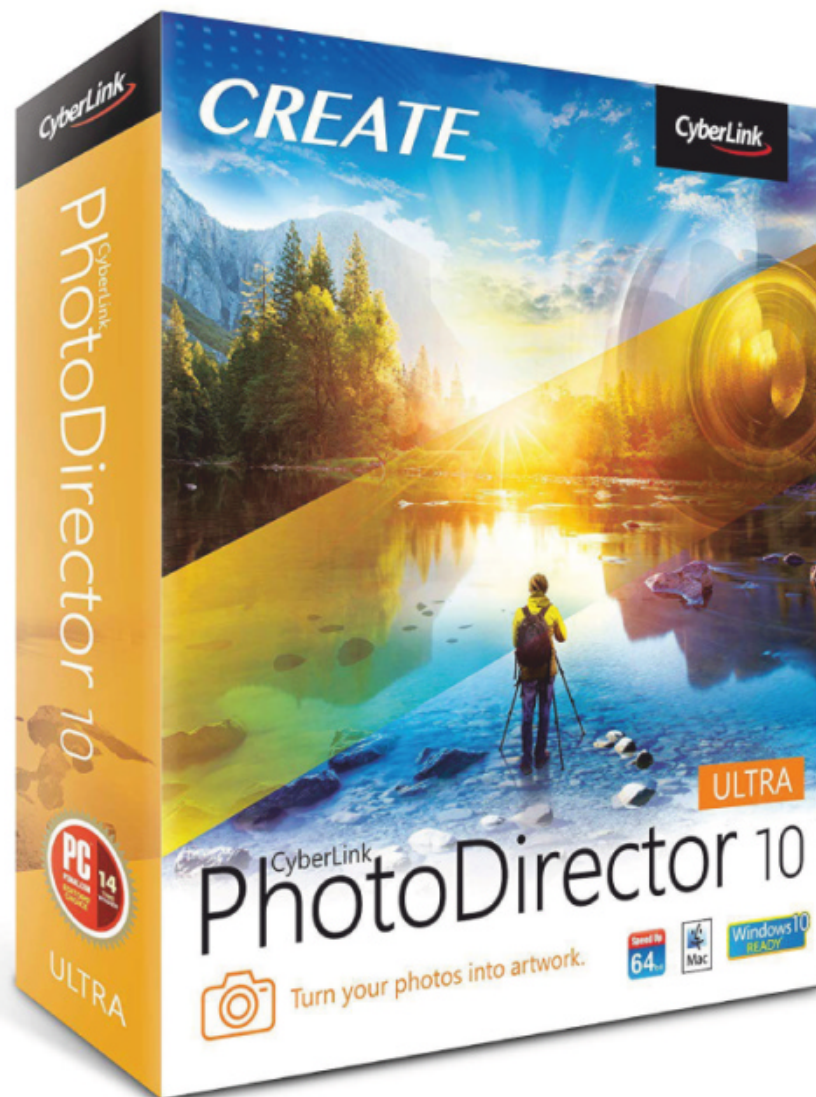


PHOTO-EDITING SOFTWARE

CYBERLINK PHOTODIRECTOR 10 ULTRA: INTRIGUING ALTERNATIVE TO CONSUMER MAC PHOTO EDITORS

BY JACKIE DOVE

CyberLink PhotoDirector (go.macworld.com/cbpd) is kind of a sleeper in the Mac pantheon of desktop image editors. It competes with Apple Photos, Adobe Photoshop Elements, Pixelmator, Luminar, and other consumer imagers. CyberLink is mostly associated with Windows, and PhotoDirector is the only cross-platform item in the company's suite of multimedia prosumer apps.

Like many of CyberLink's Windows apps, PhotoDirector 10 has its own brand of sizzle that may prove appealing to Mac

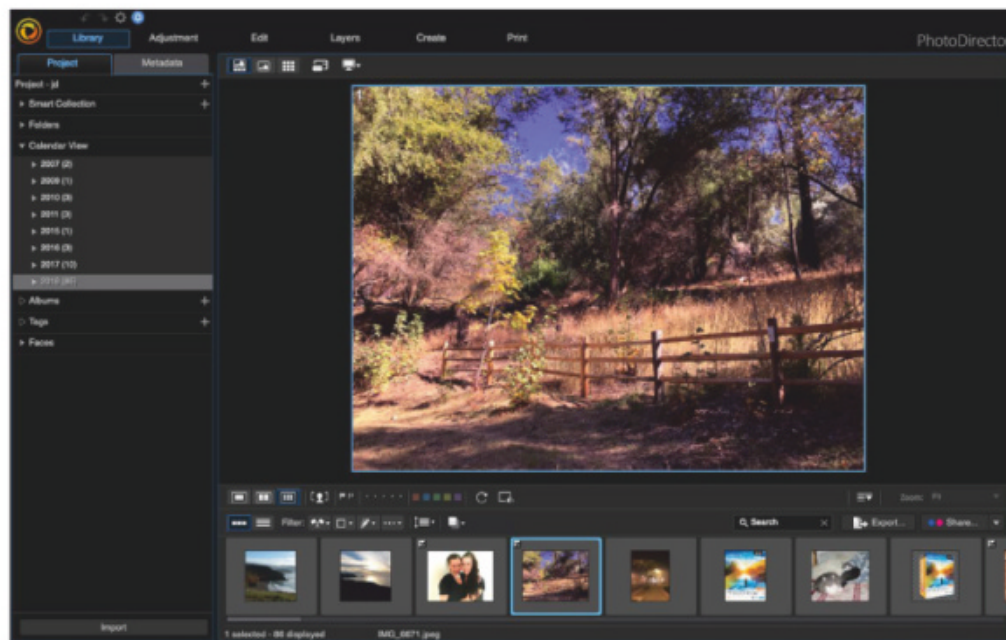
users, especially those interested in turning their photos into works of art.

The latest version of PhotoDirector offers multiple new layer features, keystone correction, content aware clone, the ability to separate imported GIFs into individual frames

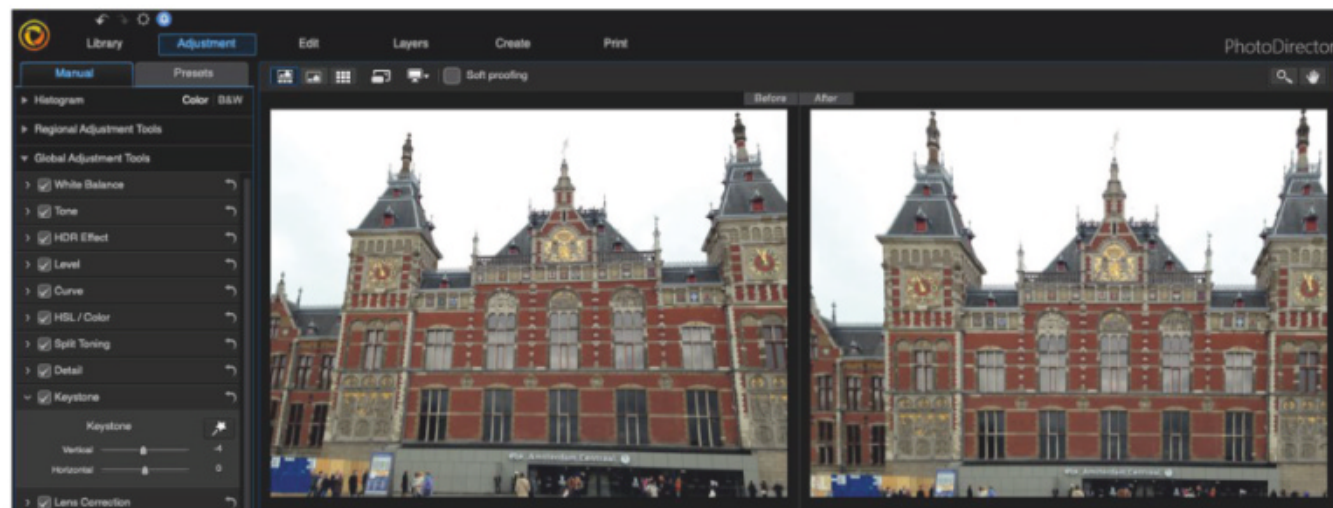
for multi-exposure or multi-sequence images, and artificial intelligence–based tricks, as well as tethered shooting, soft proofing, template packs, and a new calendar view. That’s in addition to fun and advanced features from previous versions, such as 360-degree photo handling,

cinemagraph creation, multi-exposure images, face and body beautifiers, video-to-photo face swapping, and more.

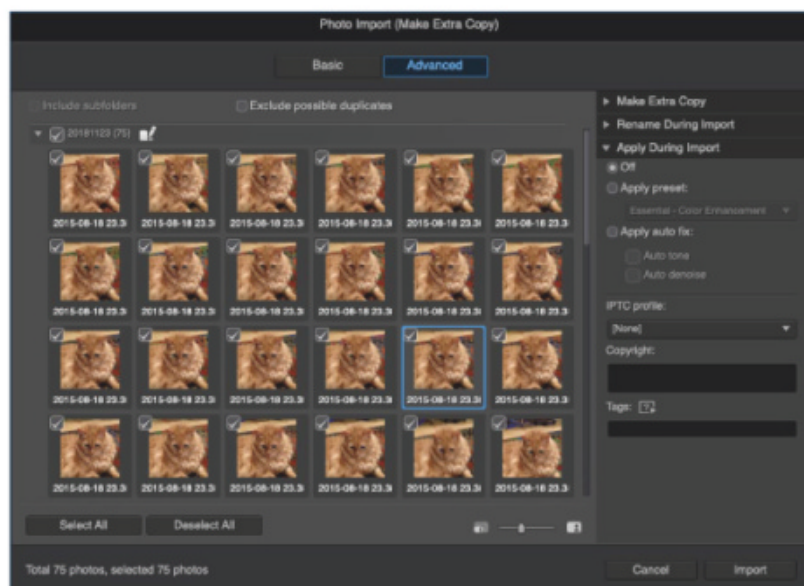
PhotoDirector 10 Ultra also includes 25GB of space on the CyberLink Cloud so you can store, access, and work on your images from anywhere you wish.



A new Calendar view sorts photos by year.



Just one click can correct keystone distortion.



Import an animated GIF as separate frames.

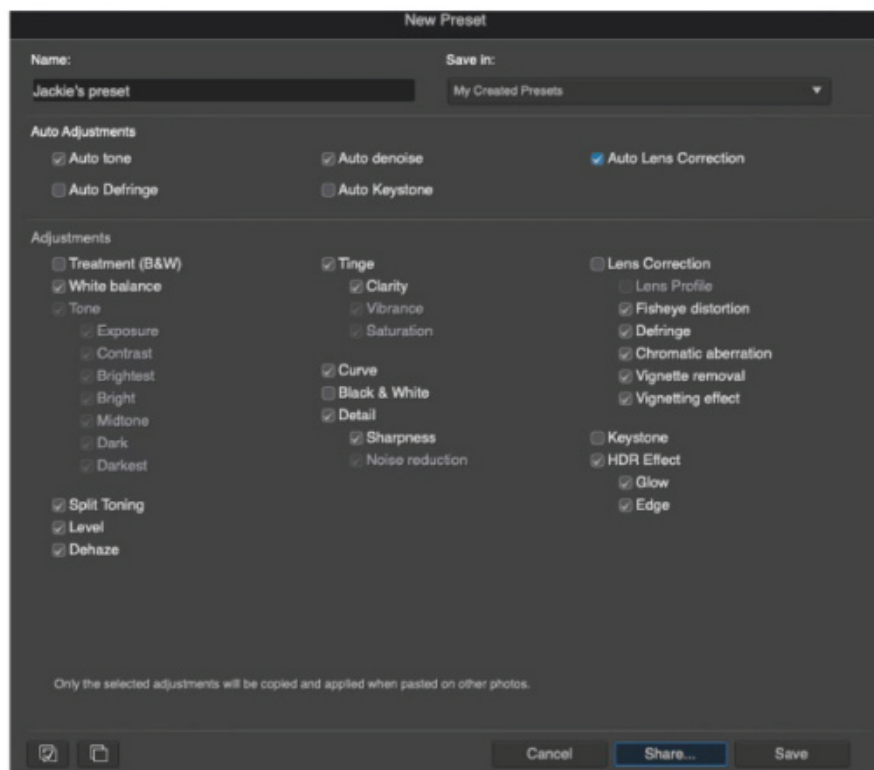
THE ART OF PRESETS

One-click photo presets lend easy-to-use creative variations to your photos, letting

you automatically choose among HDR, Black & White, and Split Tone looks, as well as styles designed specifically for portraits and landscapes.

PhotoDirector 10 comes with a number of built-in presets, though tons of additional presets are available for individual download from the company's DirectorZone (go.macworld.com/drzn) website and you can create your own presets. While you can't adjust the presets from the preset pane, you

can switch to the Manual pane, which contains the needed controls.



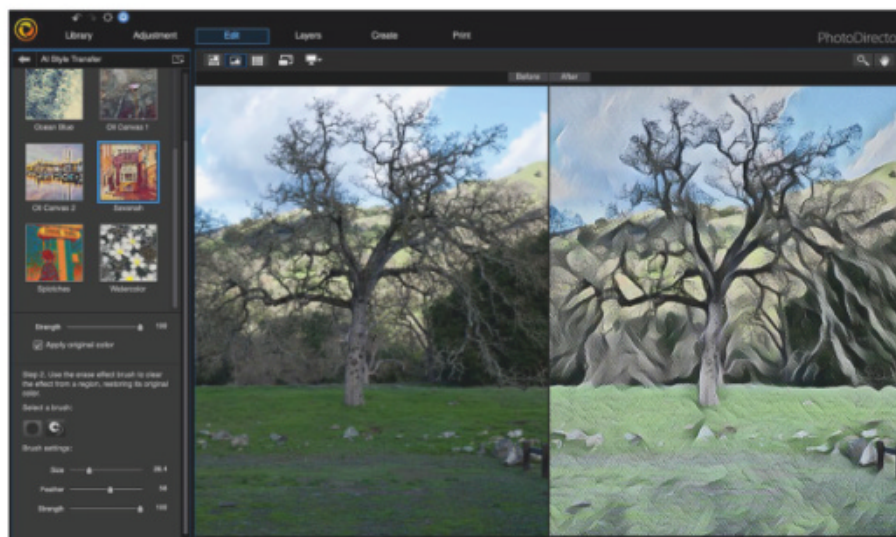
You can create your own presets based on existing ones.

AI STYLES

Everyone remembers Prisma (go.macworld.com/prsm). It was part of a wave of server-based AI apps (go.macworld.com/sbai) that mesmerized viewers by transforming photos into specific and recognizable artistic styles. That concept lives to see another day in PhotoDirector 10.

Like Prisma, CyberLink's AI Style Plugin uses deep learning to produce brush strokes and color tones of artistic styles that alter

photos on the pixel level as opposed to applying external filters. CyberLink's AI Style Packs for PhotoDirector are mostly paid add-ons that require separate download and licenses, but there are a number of free samples built into the program.



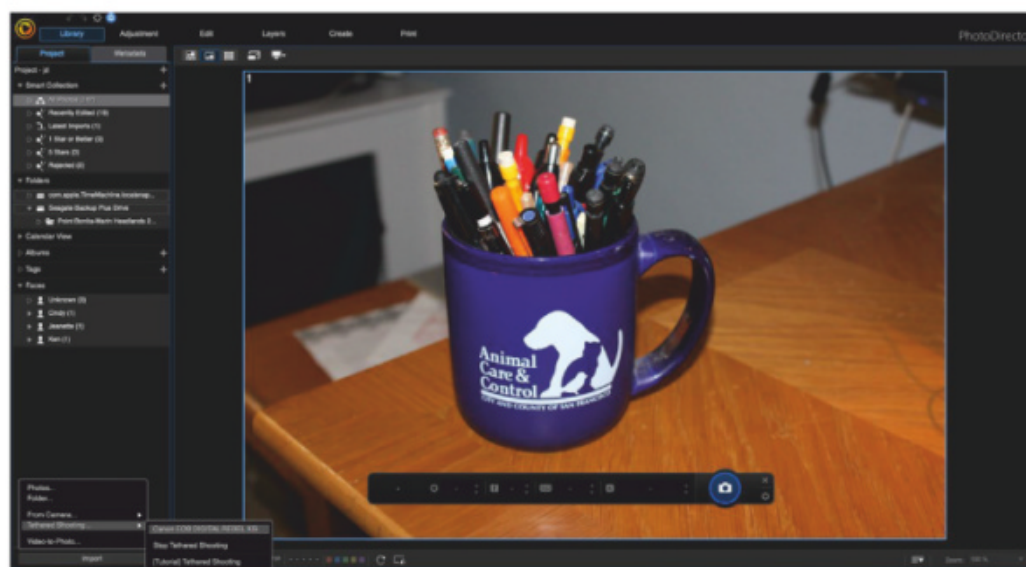
AI Style Transfer uses deep learning to style your photo.

TETHERED SHOOTING AND SOFT PROOFING

Tethered shooting is a handy studio technique that lets you attach your camera to the computer as you shoot, allowing you to tweak shutter speed, aperture, white balance, ISO, as well as trip the shutter. I was able to link my camera to the

app and could see the controls change dynamically on the camera readout in real time as I altered them on screen, but I could not get the visual preview to appear on the screen before the shot.

That was disappointing, but the reason is that the feature was developed using the

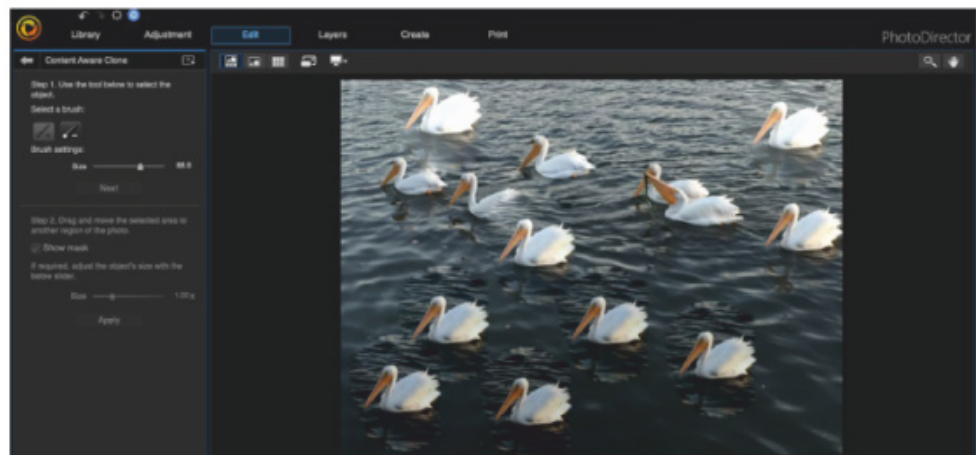
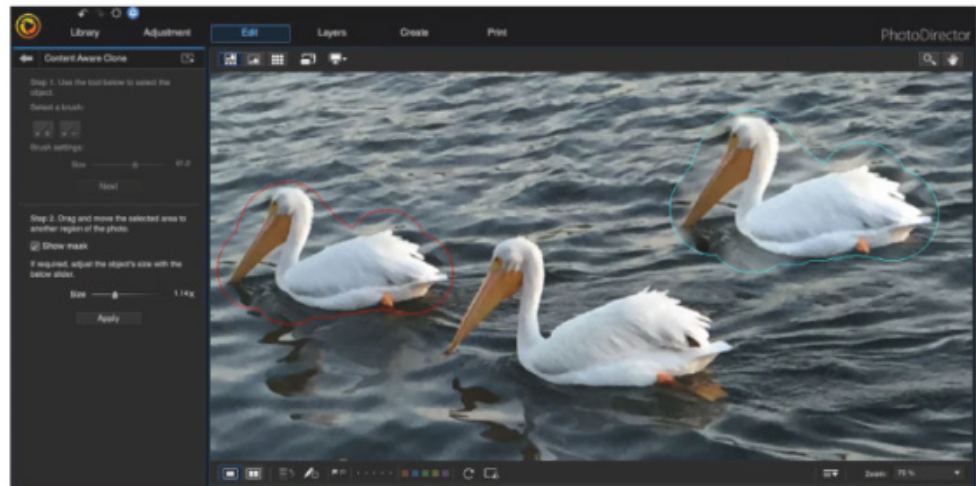


Attach your Nikon or Canon camera to your Mac to control various settings from within the program.

camera companies' SDK, which does not enable a live screen preview within the app. Moreover, this feature works only with certain Nikon and Canon cameras. If you are looking forward to using this feature, make sure your

camera is supported via the list CyberLink has published ([go. macworld.com/cbpb](http://go.macworld.com/cbpb)).

Soft proofing lets you view simulated printer output on your monitor and includes a gamut warning signaling color range issues before you start wasting ink. While I was able to access the program's built-in color profiles, my own printer failed to show up as a profile I could select, even though it showed up in the regular printer dialog.



Content aware clone is one of PhotoDirector's new content aware features. You can have as many pelicans as you want.

CONTENT AWARENESS

Adobe popularized content awareness with its Photoshop and Photoshop Elements algorithms, while Pixelmator and others also offer this easy way to remove unwanted objects from a scene without destroying the integrity of your image.

With PhotoDirector, you can now duplicate, or move objects or people within photos. I found this feature hit or miss, with busier background fills less accurate than simpler ones. I also found

the performance in these operations somewhat slow on my mid-2013 MacBook Air running the latest macOS.

NEW LAYER FEATURES

Layer editing with Express Layer Templates offers the flexibility to create unique compositions by combining images, text, and graphics with blending modes and masks. PhotoDirector 10 provides built-in layer-based layouts for consumer-oriented web pages, framed

photos, greeting cards, and memes, while special effects like grunge, light leaks, scratch, and lens flare give family photographers tools to make unique compositions for special occasions.

PhotoDirector 10 also introduces clipping masks, layer grouping, and the ability to add new empty layers to projects, all of which are fairly standard features for most popular image editors catering to enthusiasts. These features worked as expected.

BOTTOM LINE

Several features distinguish CyberLink PhotoDirector 10 Ultra from its competitors, offering a fun, intriguing take on various advanced and novel photographic techniques. While this version catches up to other popular image editors in its



Express Layer Templates add all kinds of layer-based shenanigans to your photos, and you are free to hide and show any layer you want.



CyberLink PhotoDirector 10 Ultra

PROS

- Tethered shooting and soft proofing offer alternate shooting and printing techniques that streamline some tasks.
- Allows creation of AI stylized photos.
- Huge online inventory of free styles and additional paid style packages.

CONS

- Some operations are time-consuming.
- No tethered shooting with iPhones.

PRICE

\$99

COMPANY

CyberLinks

approach to layers and clipping masks, the ability to apply AI styles, and do tethered shooting and soft proofing present an alternate angle on consumer photography.

That said, certain features did not work as expected or were not as useful as I had hoped, and performance in some computational operations could take awhile. A trial version is available, allowing you to make sure you're getting everything you want from the app before forking over your cash. ■

Hot Stuff

What We're
Raving About
This Month

GJEMENI COUCH

gjemeni.com

USB charging ports are showing up in all sorts of places, and Gjemeni puts them in the most useful places of all: Furniture. The company's articulating couch has USB ports that are rated to deliver 1.5 amps of power, so they're not capable of fast-charging devices. It's also outfitted with a 110-volt grounded AC outlet on each side of its backrest. The couch's backrest is split down the middle, so you can recline each side independently of the other. A ratchet mechanism allows you to set the backrest in three positions: Slightly upright, slightly reclined, or fully flat. —MICHAEL BROWN



Hot Stuff



BOSE FRAMES

[bose.com](https://www.bose.com)

Bose Frames have of Bluetooth micro speakers integrated into the bulked-up arms of eyeglass frames. Stylish though not stylistically groundbreaking, Frames deliver surprisingly substantial sound without requiring you to plug anything into your ear canals. Frames produce a satisfying, brightly articulated, 3D-ish sound field, an airy presentation that worked well with the light and medium density pop, jazz, and classical music. What you won't get is deep bass, under any circumstance. Its microphone clarity was judged mildly muffled by listeners at the other end of a call, but low (on the favorable side) in ambient noise pickup.—**JONATHAN TAKIFF**

TRAEGER TIMBERLINE 850 PELLET GRILL

traegergrills.com



The Timberline 850 connects to your Wi-Fi network, which means you can fire it up, load your food, and pretty much not have to come back until everything's cooked. You can just sneak the occasional glance at the Traeger app on your smartphone or tablet. The grill streams the temperature inside the grill to the app, while a probe reports the internal temperature of the food you're cooking. And it's easy to cook several things at once, because the Timberline 850 has three adjustable grills offering 850 square inches of grilling surface. —MICHAEL BROWN

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5 ways to fix slumping iPhone sales

Whether it's a bump or a free fall is all up to Apple's response.

BY MICHAEL SIMON

After years and years of prognosticating doom and gloom for Apple, the analysts finally got it right: iPhone sales are slumping (go.macworld.com/q119). It was bound to happen sooner or later, and there was enough smoke to suggest that Apple's quarter would be a dumpster fire for iPhone sales. Tim Cook placed much of the blame on China in a letter to investors (go.macworld.com/ltin), and while there

may be some truth to that, plenty of other factors contributed to the declining sales. Here are five reasons why the iPhone hit a sales snag and how Apple can fix them all.

SIMPLIFY THE IPHONE LINEUP

There was a time when choosing which iPhone to buy was a matter of deciding whether you wanted one in black or white. Those days are long gone, of course, but the current lineup is anything but simple to

figure out. There's the iPhone XR (go.macworld.com/xrip), which starts at \$749 but has a larger screen than the \$999 iPhone XS. The XR's single rear camera still takes bokeh-style portraits like the XS, but only of people. The iPhone XR comes in a bunch of colors, but if you want gold, you'll have to spring for the XS and you can only get 128GB of storage in the XR. And that's to say nothing of the naming confusion.

Most people don't understand the difference between OLED and LCD or why the limits of computational photography make it hard to detect the edges of dogs and flowers. They just want to make an easy decision about which phone to buy. If Apple wants to stick with the three-model lineup going forward, there needs to be a clearer distinction between them, starting with the sizes. Choosing between iPhones should be about size, color, and space rather than camera features, screen quality, and gigabytes.

SELL A SMALLER iPHONE

Big phones are obviously the industry trend, and Apple is smart to follow it. But as the largest iPhone has ballooned from 4 inches to 6.5 inches over the past several years, the options for smaller phones have all but disappeared, with the nearly 6-inch iPhone XS representing the most compact iPhone you can buy (other than the older iPhone 7).

Apple already had a solution to this problem, but they killed it in 2018: the iPhone SE. Bringing it back with updated specs and a new design would go a long way toward energizing the lineup and boosting sales.

STOP THE ANNUAL UPDATES

If you compare the iPhone X (go.macworld.com/xiph) to the iPhone XS (go.macworld.com/xsip), you'll be hard-pressed to find much of a reason to upgrade. The highlights are pretty much a faster processor, adjustable depth control when taking and editing portraits, and a new gold color. That's barely enough to get an Apple fanatic to upgrade—let alone the average consumer—even if they're on the iPhone Upgrade Program. Yes, the iPhone XS Max is the new hotness, but 6.5-inch phones aren't for everyone.

Perhaps it's time for Apple to abandon the yearly refresh. Yes, there would be some caterwauling from longtime users who expect a new iPhone every year, but ultimately it would benefit Apple and consumers. For one, there wouldn't be a pre-September dip in sales, since we wouldn't know exactly when the new model was arriving. And it would give Apple time to release iPhones that are truly new, not kinda-sorta new. Apple already does this with Macs and iPads, so it would hardly be unprecedented. And besides, aren't new



The iPhone isn't the runaway leader of the smartphone pack anymore.

products more exciting when we don't know they're coming?

HEY SIRI, YOU NEED TO CATCH UP

There's no denying it: The iPhone is no longer the undisputed leader of the smartphone world. And it didn't help that basically every manufacturer was able to copy the iPhone X's design so quickly. Samsung (go.macworld.com/s9sm), Huawei (go.macworld.com/hm20), even OnePlus (go.macworld.com/op6t) all make handsets that are just as nice as the iPhone, so the decision to buy basically boils down to two things: software and AI.

While iOS 12 can go shoulder to shoulder with Android, Siri just doesn't cut it, especially when compared to Android's default AI chatbot, Google Assistant. The Shortcuts app is too confusing for most people, the HomePod is a non-starter, and most cheap smart-home plugs and lights

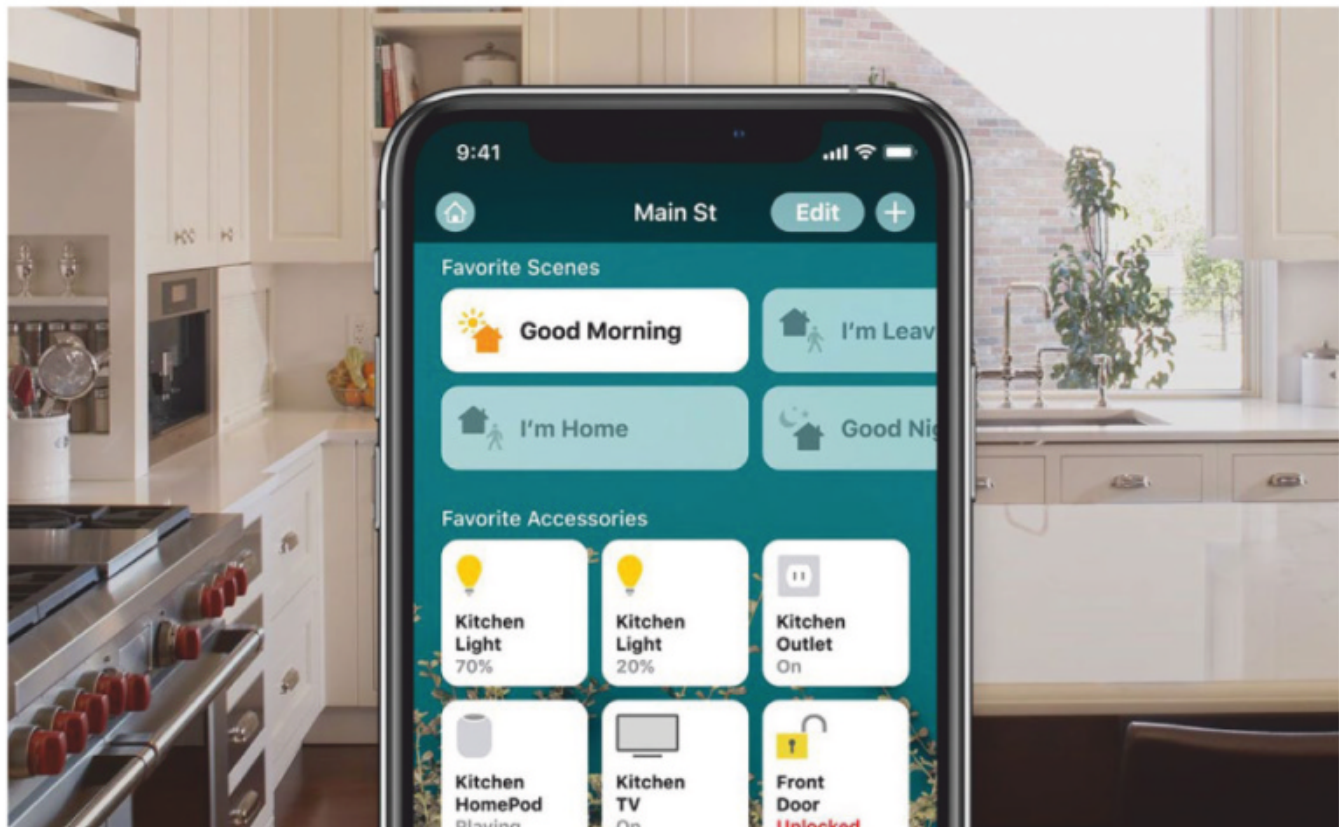
don't support HomeKit (however, recent CES announcements offer hope that will change).. If Apple wants to turn iPhone sales positive again, the best way to do it is by pouring a load of resources into

bringing Siri up to speed.

MAKE THE IPHONE MORE AFFORDABLE

I saved the most obvious for last. Even if you exclude the iPhone SE, the average price of an iPhone has jumped from \$759 in January 2017 to \$1,049 today, an increase of nearly 40 percent. Blame it on whatever you'd like—greed, costs, tariffs, sales slump—it adds up to a higher cost for consumers. And that equals fewer sales.

When the iPhone X released at \$999 in 2017, we assumed there was a “tax” built in for early adopters, much like the original iPhone and its \$600 subsidized price tag. That wasn't the case. The iPhone XS cost the same as the iPhone X, and the XS Max is even more, with a starting price of \$1,099. Those figures are unsustainable if Apple wants the iPhone to grow. Fortunately this one's easy to fix: Chop \$100 off the price of every iPhone and sales will instantly pick up. ■



HomeKit was a surprise winner of CES 2019. Now Siri needs to get a whole lot better

Does a great number of devices equal great respectability?

BY MICHAEL SIMON

For a company that's mired in its biggest stock slump in a decade (go.macworld.com/rvdr), Apple sure isn't wallowing in its poor sales. Without stepping foot in Las Vegas or making a single announcement of its own, Apple is having one of its best CES

conferences in years, as companies turned to HomeKit en masse to boost their smart offerings.

While Google Assistant and Alexa controlled their fair share of the CES spotlight, they did little to overshadow Siri. In fact, Apple's HomeKit was one of the

surprise winners of this year's show

(go.macworld.com/hkwn), as Sony, LG,

GE, Vizio, Belkin, Arlo, Ikea, TP-Link and several others

all rolled out products and updates featuring HomeKit integration, an abrupt turnaround from previous shows that all but ignored the iPhone maker's smart-home ambitions.

It's safe to say that Apple can officially count itself as a major player in the smart-home space. When the new HomeKit-enabled products start hitting the market later this year, consumers won't need to buy specific HomeKit-enabled hardware, an earlier requirement that inhibited Apple's smart-home growth. With a few exceptions, customers will soon have the option to use one of three AI assistants each time they make a request to control something in their home, and that means one thing: Siri needs to seriously step up its game.

AFFORDABILITY OPENS THE DOOR

While HomeKit has long been supported by major brands including Philips Hue, Ecobee, and Lutron, its offerings have



HomeKit support for TP-Link's Kasa plug, left, could open the door for other affordable smart-home accessories, like this light switch.

been extremely thin compared to its peers. The CES announcements might have been relatively low-key, but the sheer number of them is what's important.

The most interesting is TP-Link in that it's updating one of its most popular plugs with HomeKit support. Long known as an affordable smart-device manufacturer, TP-Link's Kasa Smart Wi-Fi Plug Mini (go.macworld.com/kasa) is one of the most popular entry-level smart outlets on the market, with nearly 2,500 4- and 5-star reviews on Amazon alone. Once the HomeKit update goes live in "early 2019," anyone who owns one along with an iPhone will be able to test out Siri and the

Home app, many for the first time.

The fact that TP-Link is even considering HomeKit means that Apple is breaking through. Cheap smart plugs are a great way to test out assistant and smart-home functionality

without breaking the bank, but

people previously had to seek out a specific HomeKit plug from a pool of so-so options. Support for the Kasa plug opens up HomeKit and Siri to a world of possibilities, even alongside announcements from high-end brands such as Brilliant and Netatmo. That's the difference with this year's CES: Apple isn't just courting luxury smart-home brands—it wants everything to go through Siri. And even without a best-selling smart speaker, Apple is in a position of power.

SIRI AS THE DEFAULT

Earlier this week Google announced that Assistant is available on more than a billion devices around the world (go.macworld.com/bln), trumping Amazon's own



When someone buys an Amazon Echo, they want Alexa, plain and simple.

declaration that more than 100 million Alexa devices are in the wild (go.macworld.com/100m). Apple hasn't chimed in on this measuring contest, but if it did, the number would be actually closer to Google's than Amazon's simply due to the amount of devices it sells.

However, the fight against Amazon is still an uphill one. When someone buys an Alexa device, they're specifically buying it as a smart device, whereas Google and Apple sell hundreds of millions of AI-enabled phones and watches that might never actually be used for that purpose. There may be a billion Google Assistant-available devices, but other than the occasional alarm or weather report, many of them are likely not being used to

summon Assistant at all and certainly not as often as Alexa.

But Google's point is Apple's too: Like a Trojan horse, it means that Siri and HomeKit are already living in hundreds of millions of people's homes, just waiting to be used. The new infusion of HomeKit-enabled devices announced at CES will certainly jump-start use of the Home app and voice-controlled smart-home commands, but to truly challenge Alexa and Google Assistant, Siri needs to learn a bunch of new tricks.

BIGGER THAN A VOICE

The HomePod has been on shelves for nearly a year and Siri is still basically an afterthought for anything other than music. There are no skills or actions to

personalize it. It can't play games. There isn't a kid mode. It doesn't recognize multiple users. It's difficult or impossible to integrate with a third-party service.

It's not so much about smarts. If you're taking home control, Siri is on a par with the rest of the assistants: I can ask it to turn on my living room lights just as I would Alexa or Google Assistant, and it obliges. It hears and understands me extremely well—often better than its competitors in fact. It knows a lot of stuff and is very quick to respond. But I still rarely use it.

Despite having all three assistants at my disposal in my house via a HomePod, three Google Homes, and numerous Echo devices, I pretty much only use my HomePod to play music. On the contrary, I



The HomePod is a great music player, but isn't very smart as speakers go.

ask my Echoes all sorts of things. My son plays games and listens to stories. And I have several Routines set up for home automation. The reason is simple: Alexa and Google Assistant have progressed beyond complicated setups and computer-centric automation and have become actual home companions.

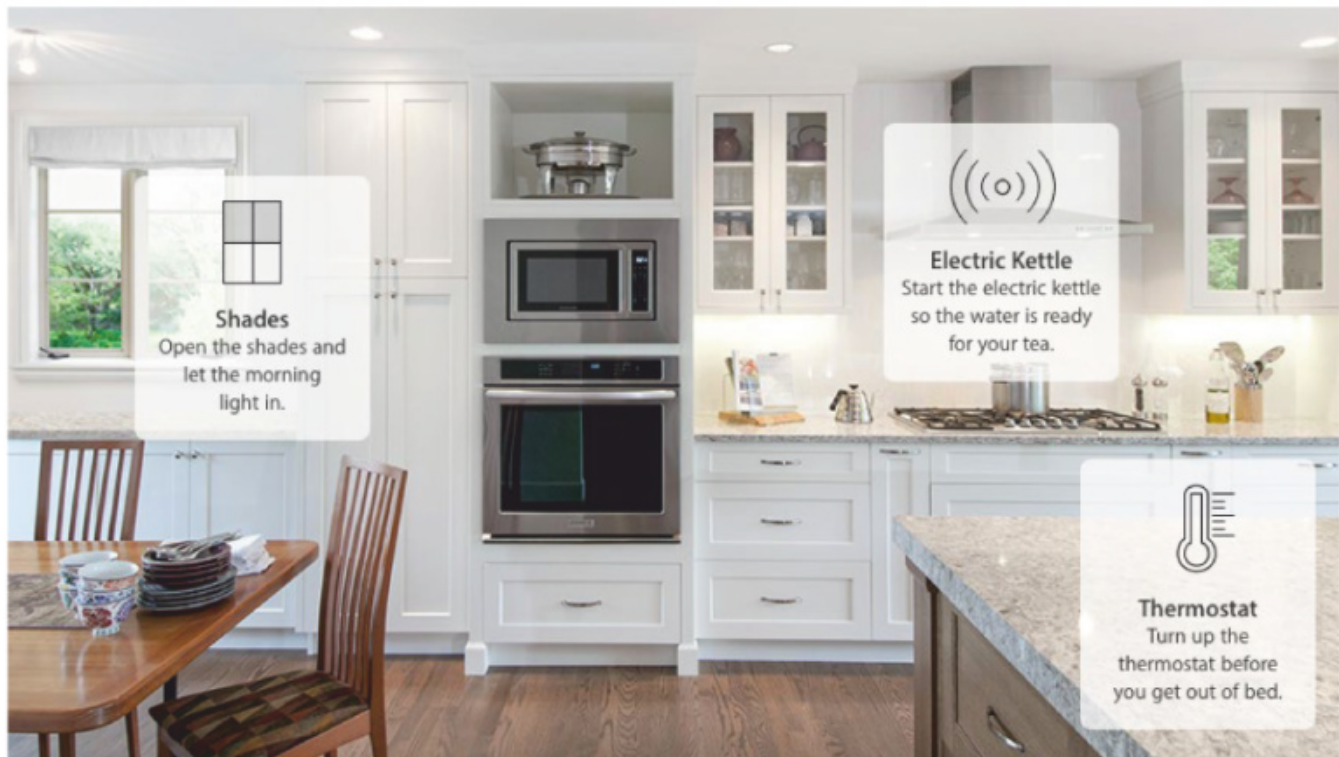
CULT OF PERSONALITY

A common refrain about Siri is that Apple rested on its laurels too long because the AI tech behind it was so far ahead of the rest of the industry. That may be true, but Apple also failed to develop Siri's personality beyond the occasional quip.

An AI assistant's personality is about

more than its speaking voice. It's about conversing and having fun. Google Assistant can answer my phone. Alexa says good night to my son and turns out his light. Those things are out of reach of Siri's capabilities, and Siri Shortcuts is just too complicated to be a viable alternative to the routines offered by Google and Alexa. Until Apple opens up Siri and the HomePod to an array of third-party skills and actions, and things like multi-user support and location awareness, it's never going to elevate beyond a rote application that merely speaks and understands human voices.

HomeKit may have notched a win at CES, but Siri has a long way to go. ■



HomeKit can be the gateway to a broader and better Siri, but there's work to do.

Let's face it: The iPhone XS Max is the new iPad mini

The iPad mini is too small for Apple's vision of what an iPad should be. Let's let it go.

BY LEIF JOHNSON



Let us pity them—the sad, devoted lovers of the iPad mini. In the wake of every Apple iPad event since 2015, you can find them frowning in the crowds or, later, rushing to Reddit to weep in collective misery at the absence of their beloved device's Fifth Coming. But I say there's no cause for all that melodrama. I say Apple has already given us the latest iPad mini: It's just calling it the iPhone XS Max.

EXTRA PADDING

This would have been a weaker argument as recently as a year ago, when Apple's largest phones remained saddled with chunky bezels. Now, we're seeing a reversal of the old order. In 2010 it was popular to joke that the iPad was little more than a massive iPhone, but with the arrival of the iPhone XS Max, it's increasingly more accurate to say the iPhone is a tiny iPad.

After all, Apple still describes ([go. macworld.com/mni4](http://go.macworld.com/mni4)) the iPad mini as a device that delivers “uncompromising performance and potential in your hand.” It gives you “power that’s anything but mini.” It’s light! It’s thin! Frankly, that sounds more like a description of Apple’s rock star iPhone than the sluggish, three-year-old tablet with an A8 processor that Apple still dares to sell for \$399.

The iPad mini still has size in its favor, as the iPhone XS Max has a diagonal display length of 6.5 inches while the iPad mini 4 has a diagonal length of 7.9 inches. The iPad mini 4 still wins by more than an inch, but I’m not convinced that difference is big enough to declare the iPad the clear winner.



It’s almost a square.

And such comparisons grow more complicated with the full dimensions, as iPad mini apologists readily assert. The iPhone XS Max’s full display measures 6.20 x 3.05 inches, while the iPad mini 4’s display measures 6.3 x 4.7 inches. That makes the iPad mini 4’s full display almost double the area of the one on the iPhone XS Max—darn close to the display size of an Amazon Kindle Paperwhite.

Let’s keep that comparison in mind: Amazon designed the Kindle Paperwhite for consumption, not for work. And so it largely goes for the iPhone XS Max and iPad mini 4. The onscreen keyboards on both devices are too small for long-term typing, and their cramped dimensions would discourage lengthy scribbling with

the Apple Pencil if support were ever added. As we all know from Apple’s “What’s a computer” ad (go.macworld.com/wtpc), the Cupertino-based company now wants us to associate its tablets with these activities. The iPad mini simply isn’t up to par.



When Apple calls attention to the iPad mini 4's camera, the device almost looks like an iPhone.

For media consumption, though, the iPhone XS Max does fine as a substitute for the iPad mini. I don't think it's a stretch to claim it eliminates the need to buy two different devices.

I'm comfortable using it when I play complex strategy games like *Civilization VI* (go.macworld.com/cvz6). I used it to watch three episodes of Netflix's *Daredevil* on the couch recently and never felt a small tablet would have improved the experience. Even the Kindle comparison breaks down. Holding my iPhone XS Max horizontally, I find I enjoy reading books with it far more than I do with an actual Kindle. With the XS Max's lovely OLED display, the screen's clarity comes close to mimicking what I'd expect from a physical page.

And, of course, the iPhone XS Max is so much faster than the iPad mini 4, but I

believe that's an unfair comparison owing to the iPad mini's age.

When I do need to work, though, I find the iPhone XS Max does about as good of a job as I can expect from an iPad mini. In fact, I've started using my iPhone for work more often than my iPad. Last November, Ghost's John O'Nolan lamented on Twitter ([go.](http://go.macworld.com/jnln)

macworld.com/jnln) that he'd been reduced to using a Bluetooth keyboard with his iPhone following the death of his MacBook Pro, but that's exactly how I'm writing the draft for this story. And I'm doing so by choice. Regardless of where I am, I can simply hook up Apple's thin Magic Keyboard 2 or my beloved Logitech K810 and I'm ready to go.

The only thing I really miss when I work like this is an iPad's Split-View multitasking, which greatly simplifies writing drafts and outlines while reading sources on another page. If Apple managed to bring that to the iPhone—even when only used with a Bluetooth keyboard—I'd be tempted to skip iPads altogether. It'd be nifty if Apple Pencil support eventually made it to the iPhone as some sketchy rumors ([go.macworld.](http://go.macworld.com)

[com/skrn](#)) last August suggested, but I don't miss it much on my iPhone.

A PRICE THAT CAN'T ENTICE

Apple has always struggled to fit the iPad mini in its lineup, and it doesn't surprise me that we haven't seen it for three years. As early as 2013 we reported ([go.macworld.com/dran](#)) that it was a "drain on Apple's profits," and that was when Apple was still selling them for a mere \$329.

That's a significant sum, as it's exactly the retail price of Apple's new 9.7-inch iPad (which we often find on sale for as little as \$280). Apple likely isn't going to go much cheaper than this for a new iPad, and that's important, as the price was always one of the primary appeals of the iPad mini. These days, though, the iPad mini 4 costs \$399, and it comes up short in almost every way at that price.

The new 9.7-inch iPad is a larger device, but it's not huge. I'm tempted to say it's perfect. It's about as fast as a first-generation iPad Pro. Typing on it is comfortable, whether with the onscreen keyboard or an attached keyboard case. For that matter, it leaves plenty of room for broad strokes with the Apple Pencil, making it ideal for students who need to read and take notes. In contrast to the iPad mini, the display size is large enough to justify buying one in addition

to an iPhone.

As Dan Moren said in a *Macworld* column last year ([go.macworld.com/nvwn](#)), "the iPad mini has never been a winner on margins for Apple, and now that the company has gotten the 9.7-inch iPad down to a better price, it makes the mini a much harder sell."

THE WAIT GOES ON

I have little doubt that plenty of people would buy an iPad mini if it returns. And return it may, as celebrated analyst Ming-Chi Kuo suggested last October that we might see a new iPad mini soon. And when the scrappy tablet failed to make an appearance onstage on October 30, its devotees, undeterred, resumed their doleful vigil.

But why? With a gigantic iPhone that's almost a match for the iPad mini in length if not width, with an affordable iPad that's aimed at artists and professionals rather than mere media consumers, the iPad mini now feels redundant rather than revolutionary. It's too small to fulfill Apple's vision for the iPad, and it's excessively large for tasks we can easily perform with an iPhone XS Max.

We're finally at the point where Apple is figuring out the roles of each of its complicated product lines, and now, more than ever, the iPad mini feels like a lowly extra. ■



The new Apple Pencil made me a believer

The Apple Pencil isn't just for artists and hand-note-takers. It just needed better software and hardware to broaden its appeal.

BY JASON SNELL

I probably used the original Apple Pencil for no more than an hour. I don't draw. I avoid writing by hand whenever possible. My penmanship is awful. The moment my teachers began accepting printed essays, I stopped writing them in longhand. I have never had a good relationship with pens and pencils; why should the Apple Pencil be any different?

And yet...something funny happened upon the release of the new 11- and 12.9-inch iPad Pro models with the second-generation Apple Pencil. I gave the new Pencil a try. And I've used it more in the past five weeks than in the three years that I kept the original Apple Pencil...well, it's around here somewhere, if I can find it, but it's probably not charged, anyway.

FOR ALL THE REASONS YOU'D EXPECT...

By all accounts, the new Pencil is an update that addresses all of the major shortcomings of the previous model. And to be sure, many of the improvements this time around have helped me stick with it.

Its matte finish is more comfortable to hold, and its flat edge gives my fingers something to orient with. That edge also makes it less inclined to roll off tables (though it still does if you're not careful). The awkward cap with the even-more-awkward Lightning plug underneath is gone, and it's a huge boost.

With apologies to those who liked popping off the weirdly cheap-feeling plastic cap and sticking their Pencil awkwardly into the Lightning port on their iPad to get a charge, Apple's new approach means I am far more likely to have the Pencil with me when I might use it and that it's more likely to be charged, too.

No, the new magnetic attachment and inductive charger aren't perfect. The attachment is strong enough to hold the Pencil when I'm carrying the iPad around, but it's not quite strong enough to prevent it from getting knocked off when riding along in a bag. Still, when I suspect I'm going to be doing some stuff with the Apple Pencil I can snap it on my iPad Pro and it'll hang out there—rather than needing to grab the old Pencil and find an awkward place to put it.

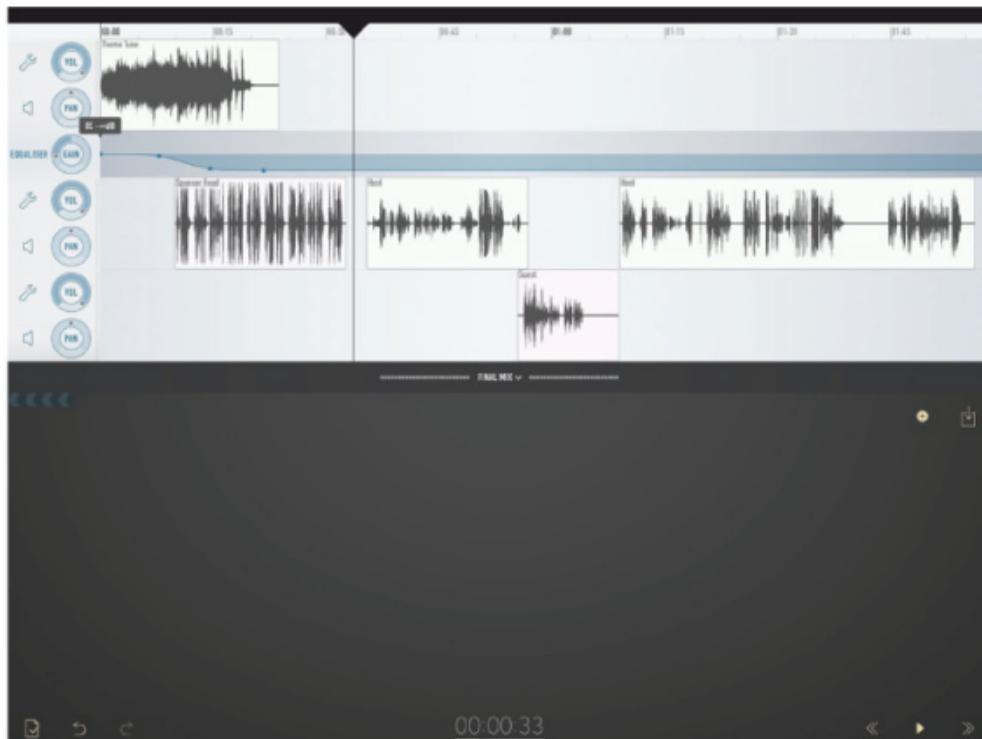
Even better, while it's hanging out, it's charging—so the Pencil will always be ready to go when I need it, without needing to wait to get it back up and charged.

...AND SOME YOU WON'T

What really pulled me back to the Apple Pencil, though, was software. The fact is, even the best accessory will be a failure if you never have reason to use it. As I explained at the beginning of this story, you're never going to see me viewing a sketch app or a painting app or a note-taking app (where you take notes by hand with the pencil) as a must-use app.

But an app I do use regularly—Wooji Juice's Ferrite Recording Studio (go.macworld.com/frst), which I use to edit podcasts—offers substantial support for the Pencil. When I first started using Ferrite, I didn't have a Pencil with me (and I believe its Pencil support was rudimentary), so I taught myself how to use it first with keyboard shortcuts and then, as the app evolved, entirely with touch gestures.

One of the great things about Ferrite is that it doesn't have a preferred interface mode—you can use touch, keyboard shortcuts...or the Apple Pencil. While I was trying out the new iPad Pros and the new Pencil, I decided to try to edit a podcast in Ferrite, and my mind was blown. Now I was tapping and sliding the pencil to delete extraneous audio. The latest update added



Ferrite Recording Studio makes audio editing easier with the Pencil.

support for double-tapping on the new Pencil, which I mapped to a play/pause toggle so I could edit more quickly without putting the Pencil down.

Not only am I using the Pencil in a way I'd never used it before, but I'm using Ferrite more, and editing in more detail. I'm performing minor dialogue edits that I might've just passed by before because it's so easy to do with a couple of quick flicks of the Pencil—thanks to its precision.

What I'm saying is, if you can find an app that does a great job supporting the Apple Pencil, you may fall in love with it—even if you've not been a fan of the Pencil up to now. In fact, I'm now intrigued by what other apps out there might make me

appreciate the Pencil even more. Given my success with an audio app, I'm starting to wonder if video-editing apps might be a possibility.

SO WHAT'S LEFT?

Now that I'm toting the Apple Pencil around more often, I'm starting to consider other ways it could be useful.

Using it to mark up documents and screen shots might be possible, though my terrible handwriting will still get in the way. And while I'm probably never going to choose writing text by hand over typing on a keyboard, I'm a little surprised that Apple hasn't added a feature that lets you write text on the screen and have it translated into regular text. I've tried third-party software keyboards that claim to do this, but they're...really, really bad. Apple could do it, though. Maybe it should.

After all, when you've got a hammer everything looks like a nail. And when you've got an Apple Pencil and an iPad Pro, everything looks like an opportunity to put pen to paper—or should I say rubber to glass? ■



How to turn off location tracking on your iPhone or iPad

The iPhone offers a high degree of control over which apps get to see your location. You can even turn off tracking entirely.

BY LEIF JOHNSON

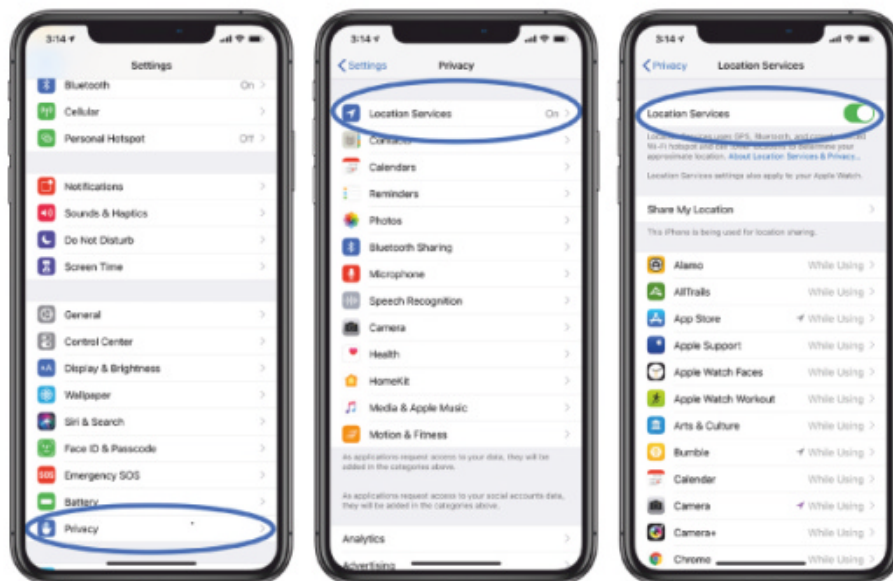
Most of us already know that many apps track our location data to better deliver information about local weather, shops, or movie showtimes. A new report from *The New York Times* ([go. macworld.com/trak](https://go.macworld.com/trak)), though, reveals that this data is often frighteningly precise and

collected up to 14,000 times per day. It's so precise, in fact, that it's possible to figure out intimate details of a person's life merely by studying it. Worse, some apps sell this data to companies who then use it to push hyper-targeted ads to your phones.

Fortunately, the report also demonstrates that we iOS users are better

protected than our Android counterparts. Even so, we're far from immune.

If you're worried that too much of your location data is being uploaded and potentially sold to the highest bidder, you can use the following guide to limit access from specific apps or even from Apple's own services.



The nuclear option.

HOW TO DISABLE LOCATION TRACKING ENTIRELY

Frankly, this seems excessive, but you may have cause for it. Just keep in mind that disabling location tracking entirely means that even Apple Maps won't be able to give you accurate readings. You also won't be able to use Find My iPhone. But here's how:

1. Open the Settings app.
2. Scroll down and tap on Privacy.
3. Select Location Services.
4. In the next menu, untoggle Location Services at the top. That's it.

Alternatively, you can scroll down one heading and disable Share My Location, a helpful feature that lets you send your exact location to friends through Messages, etc. if you believe you're in danger or simply want to show someone

where you are. Share My Location also works with some automations associated with the Home app.

HOW TO DISABLE LOCATION TRACKING FOR SPECIFIC APPS

Location tracking can be super helpful for certain apps. You don't need it for every app, though, and you certainly don't need location tracking turned on all the time. If an app supports location tracking data, Apple typically asks you at installation if you always want location tracking turned on, if you only want it turned on while using the app, or if you never want to turn it on. Fortunately, you're not locked into these choices, and changing them involves the same simple process as mentioned earlier.

1. Open the Settings app.

2. Scroll down and select Privacy.

3. Select Location Services.

4. You'll find several options here, including the above option to turn off Location Services entirely.

5. To disable location tracking for a specific app, scroll down to that App's listing and select it. You'll see three choices: Never, While Using the App, and Always. Some apps also use this menu to explain how the app uses your data.

I find the While Using The App option to be the most helpful, as it lets you take advantage of an app's best features when you need them. Only rarely do I select Always. But if you want to shut it off for good, click Never. That's it. Alter these settings for as many apps as you wish. Close Settings.

HOW TO DISABLE LOCATION TRACKING USED BY THE IPHONE ITSELF

It's not just apps that track your location data. Your iPhone also keeps track of the "significant locations" you visit the most, mainly to provide location-specific suggestions when you're using Siri or other features. Fortunately, this data is encrypted and it never leaves your phone. Even so, you may want to disable it, particularly if someone you know well can still get in your phone even with the other safeguards. Here's how.

1. Open Settings.

2. Scroll down and select Privacy.

3. Press Location Services.

4. Scroll down to System Services. It should be at the bottom. Press it.



Tinder is one of the few apps that I leave on "Always."



These screenshots highlight the dangers of reading too much into the information. I often pass some of the restaurants listed, but I rarely go in them.

5. Scroll down to Significant Locations and press it. You'll then have to enter your passcode or activate Face ID or Touch ID.

6. You can completely disable the feature by untoggling Significant Locations at the top.

7. Alternatively, you can delete the most problematic entries individually by pressing each one separately. When you do, press the Edit button in the upper right, and you can delete each entry individually.

HOW TO KEEP YOUR IPHONE FROM REMEMBERING WHERE YOU PARKED

One of the niftier features of Apple Maps is its ability to remember where you parked your car, provided your iPhone is connected to your car's Bluetooth or CarPlay. If you want to

disable it, though, you can do so easily.

1. Open Settings.
2. Scroll down to Maps. Press it.
3. Scroll down to the Your Car heading.
4. Untoggle Show Parked Location. ■



As a bonus, this frees you up to ask, “Dude, where’s my car?”

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BATTERY PACK

MOSHI PORTO Q 5K BATTERY PACK: A WELL-DESIGNED POWER BANK WITH THE BONUS OF WIRELESS CHARGING

BY JASON CIPRIANI

Moshi designs some of the best-looking phone accessories on the market. One look at the Moshi Porto Q 5K Battery Pack (\$85 on Amazon [go.macworld.com/mpq5]), and you can tell the company takes pride in its overall approach to product aesthetics.

The Porto Q 5K is covered in a cloth material. A complementary rubber ring found on top of the power bank holds your smartphone in place when the wireless charging feature is in use. This prevents notifications and general vibrations from nudging the phone off the pack and onto the floor.

The Porto Q 5K sports two ports: a USB-A port to charge another device, and a

USB-C port that's used solely to charge the battery pack itself. The USB-A port is capable of up to 12W charging speeds, but falls short of triggering rapid charging on a Pixel 3 XL or a Samsung Galaxy S9.

In testing, the battery pack had a 75.15 percent efficiency, which is near the bottom of all the battery packs I've tested. The average efficiency of packs I've tested thus far—and there are many—is 85.47 percent.

In total, the 5,000 milliamp-hour (19Wh) battery pack took three hours to fully charge using Samsung's standard wall adapter and the USB-C cable that came with the Porto Q 5K pack.

One nifty trick of the Porto Q 5K is its ability to act as a wireless charging pad



Moshi Porto Q 5K Battery Pack

PROS

- Sleek design.
- Doubles as a wireless charging pad.

CONS

- Pricey.
- Low efficiency.
- Slow charging.

PRICE

\$85

COMPANY

Moshi

while the battery pack itself is charging. Meaning, if you plug in the battery pack to top it off, you can place a Qi-compatible device on top of the pack and the wireless charging pad will turn on, and charge your device while the pack fills up.

I couldn't find any specs for the wireless charging speed on Moshi's website, the Amazon listing, or in the product pamphlet included in the box. However, I

believe it's 5W. The pack wirelessly charged an iPhone XS from 0 to 31 percent over an hour and charged a Galaxy S9 up to 73 percent before it eventually ran out of power.

In other words, don't expect to quickly top up any of your devices through wireless or wired charging with the Porto Q 5K. ■



In addition to charging devices through its single USB-A port, the Porto Q 5K offers wireless charging for phones that support it.



END
FAMILY
FIRE

8 kids a day are accidentally killed
or injured by **FAMILY FIRE**.

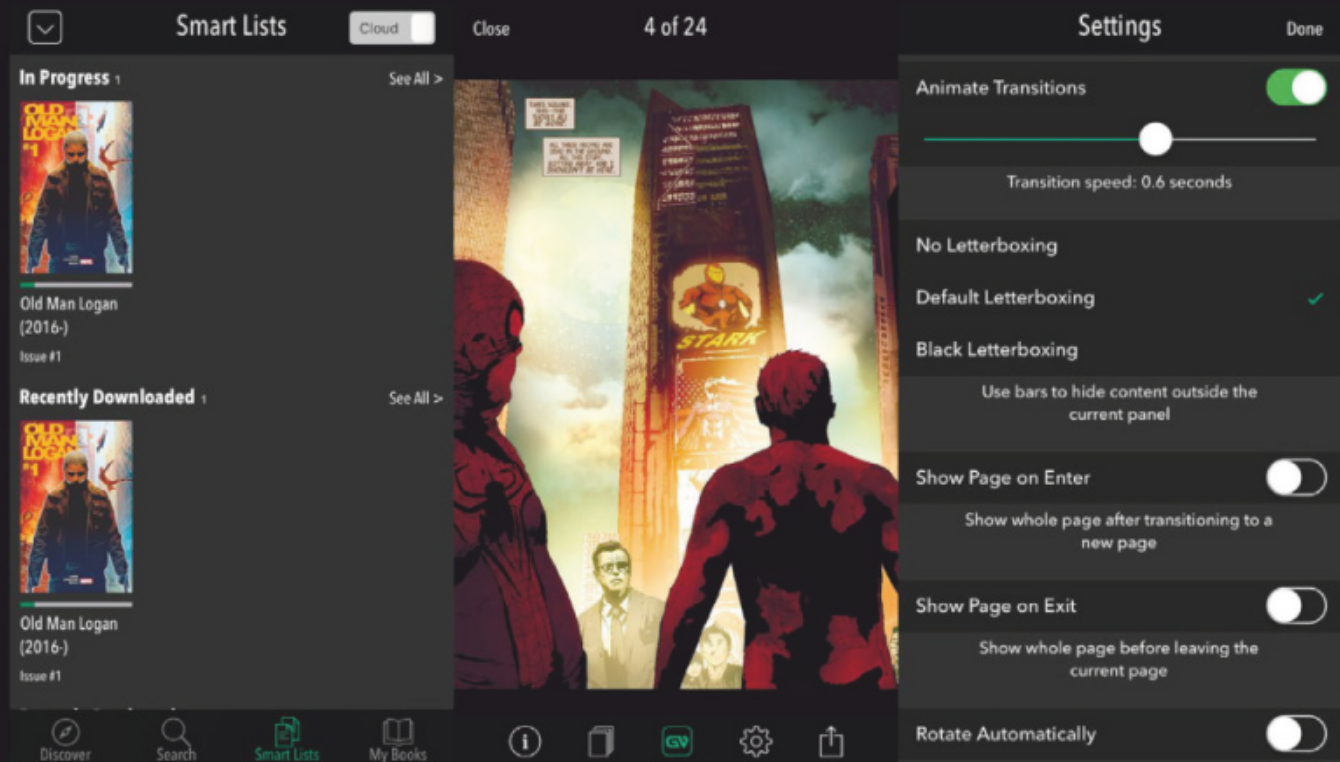
FAMILY FIRE is a shooting involving an
improperly stored gun, often found in the home.

ENDFAMILYFIRE.org

Ad
Council

5 BEST COMIC BOOK APPS FOR iPhone AND iPad

Physical issues and anthologies of comic book series don't always fit neatly into limited shelf space or travel well—but that's where digital comics come in. Growing support for the format means you can collect to your heart's content. All you need is your iPhone or iPad. **By Eammon Jacobs**



COMIXOLOGY

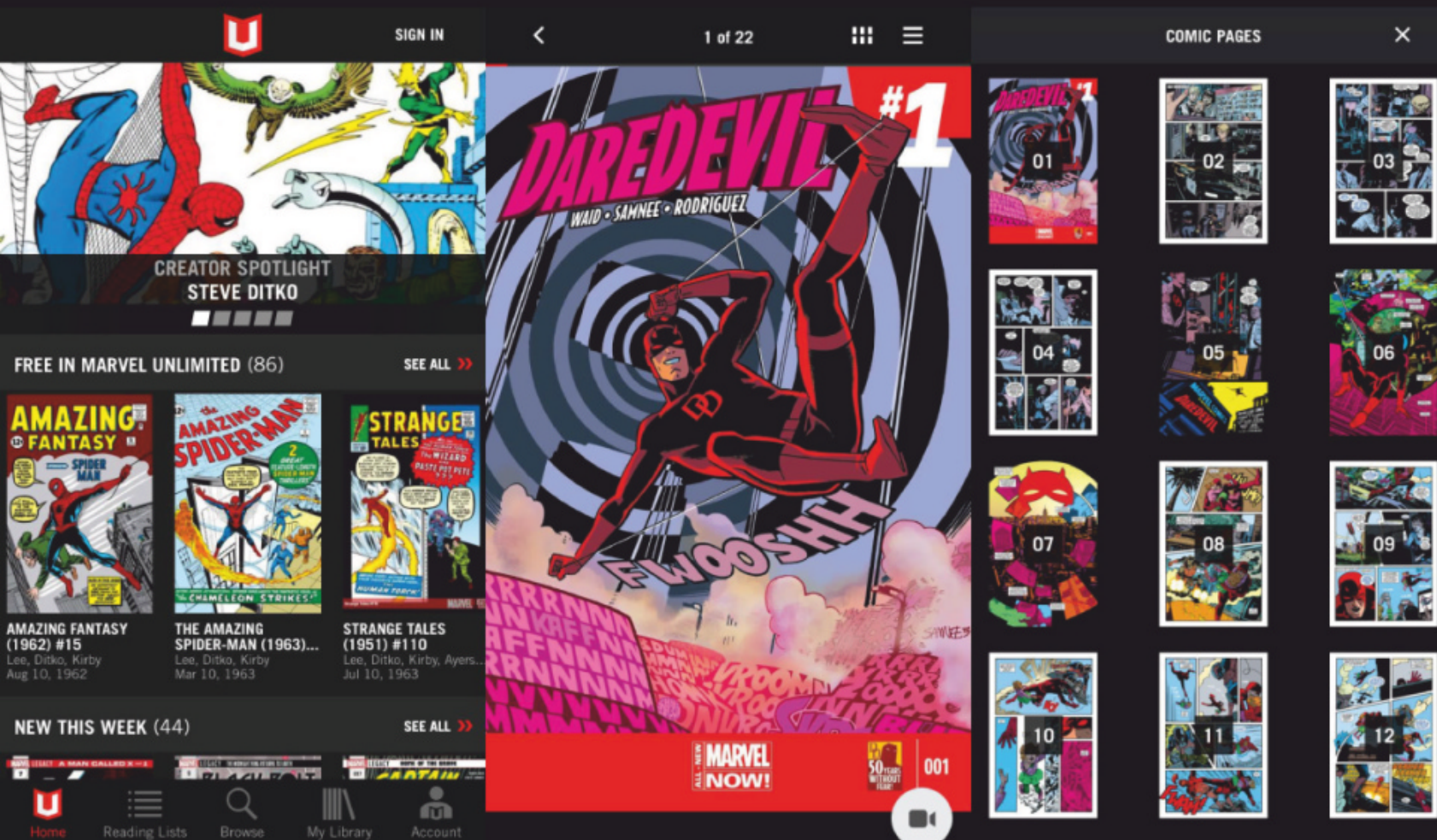
go.macworld.com/cmx

Comixology is an Amazon-owned company that lets comic book fans buy and read titles from a wide range of publishers, not just Marvel and DC. Annoyingly, the app doesn't let you import comic files that you may have downloaded from elsewhere. Tapping through an issue almost feels like an animated story, due to the fluid movement across the page. It's an entirely different reading experience from flicking through a book. Flowing transitions from panel to panel gently move you through the story, with the option to customize reading settings. There's also a letterbox option, which makes just a single panel visible across the page instead of multiple panels.

MARVEL UNLIMITED

go.macworld.com/mun

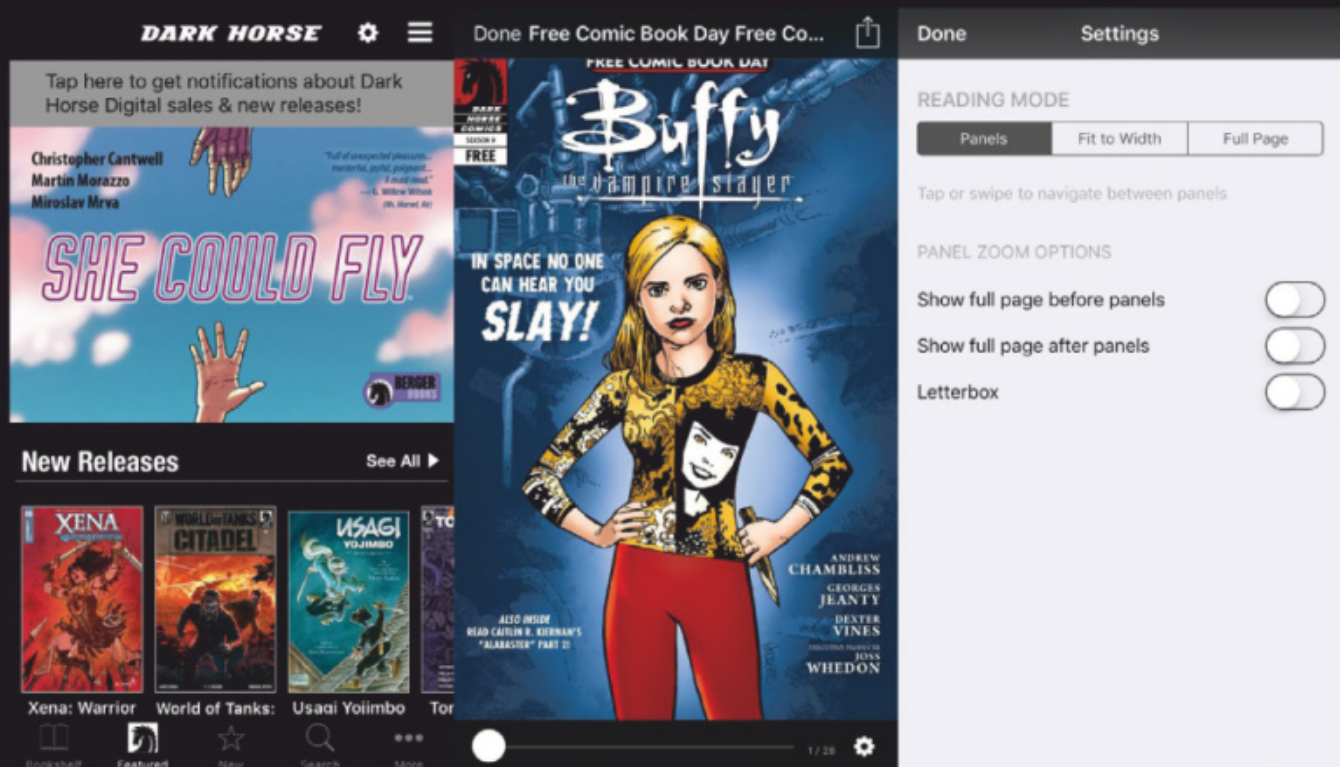
Marvel's official app is a great starting point for people looking to get into comics, especially if they're already fans of the incredibly successful Marvel Cinematic Universe movies. Marvel Unlimited has 77 free issues across a number of different series available to read: Some of these are tie-ins with the movies, while others are standalone stories. Of course, Marvel isn't offering these purely out of the kindness of its heart. Once you're hooked, gaining access to the full library of 20,000 comics requires signing up for a \$9.99 per month subscription service. New users are given a one week free trial, though.

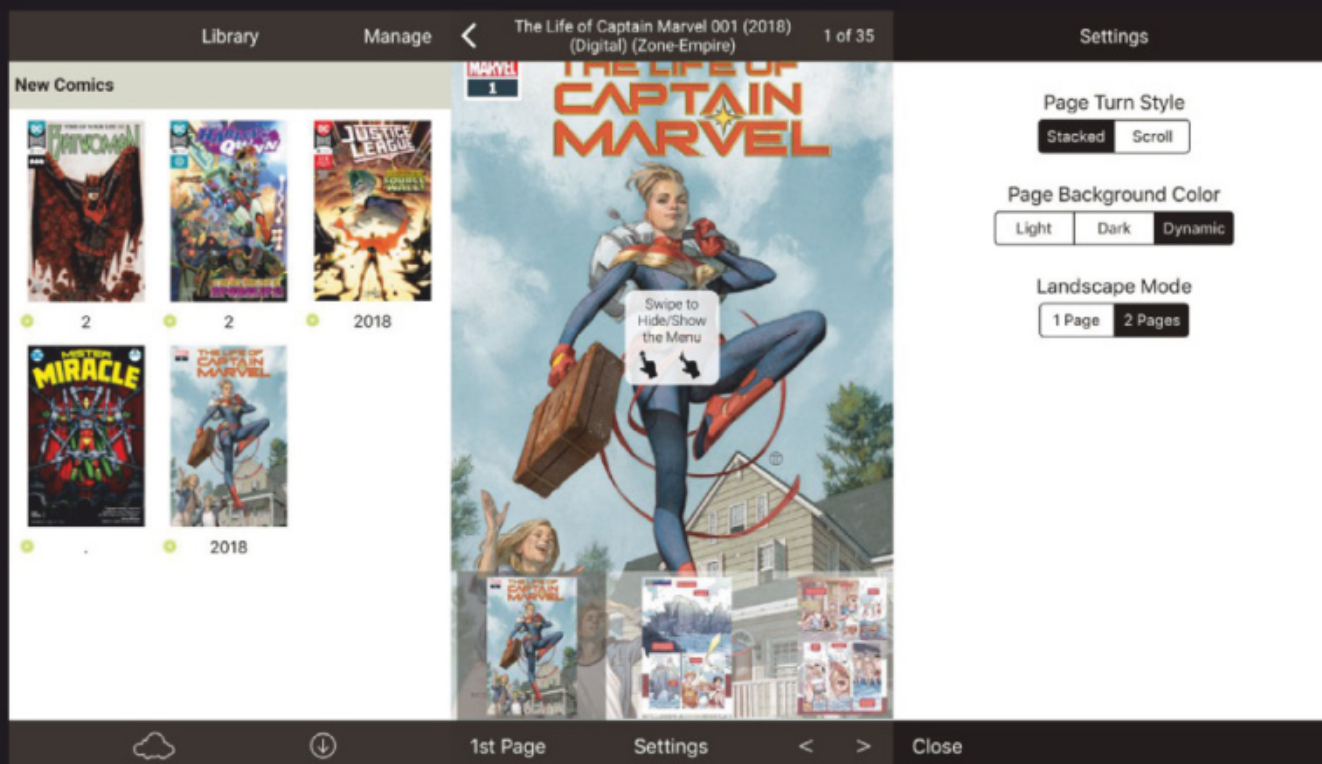


DARK HORSE

go.macworld.com/dho

The Dark Horse app makes straying from well-known series full of tights and capes easy: It gives readers access to over 5000 individual comics from Dark Horse and over 1600 issues from indie publisher Dynamite Entertainment, with new titles added to the library every week. The flow from page to page is seamless when reading an issue. The app takes the time to showcase the full page and the direction of the story that'll be shown before zooming in on individual panels and speech bubbles. Dark Horse also offers more customization of its reading settings compared to other apps' simple scroll and swipe options.

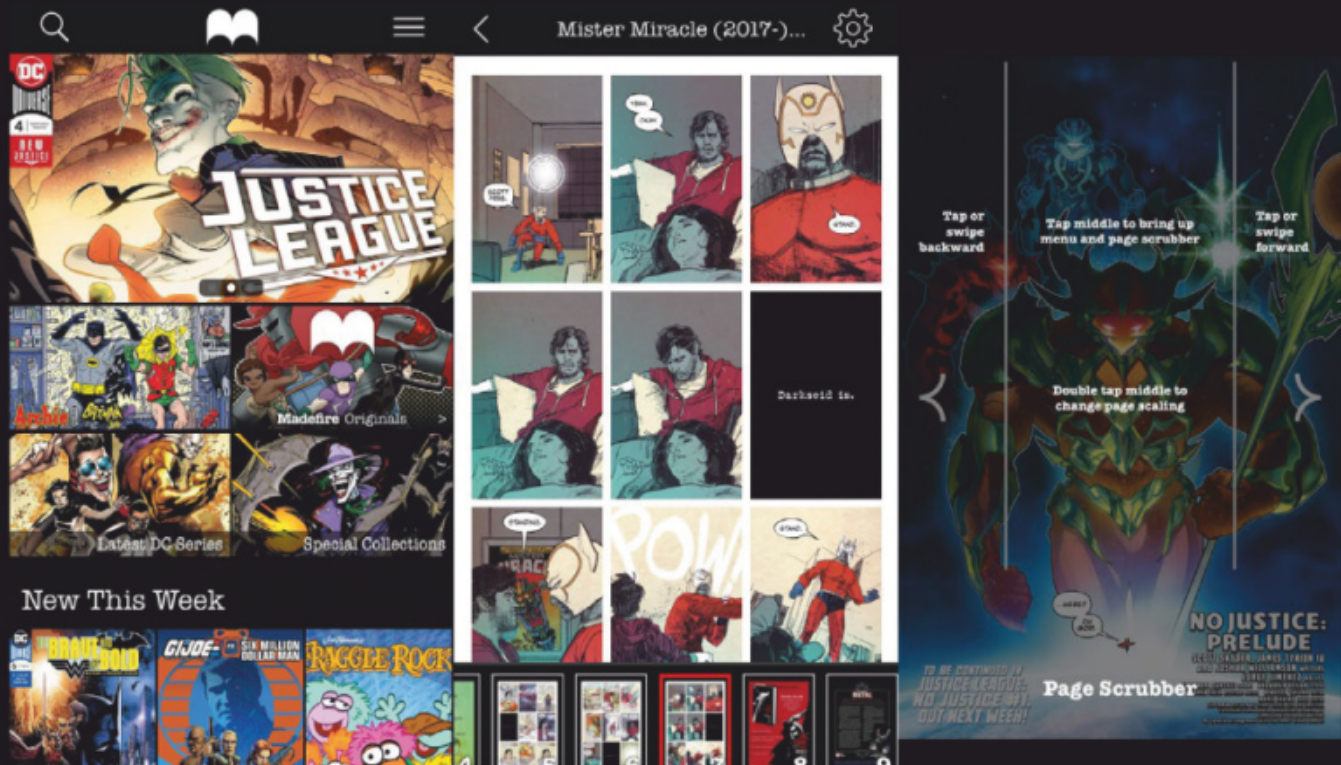




iCOMIX

go.macworld.com/icmo

If you have all of your digital comics stored on your computer or in the cloud, an app designed just for one publisher's comics (or subscription service) won't be of much use. Instead, you'll want an app like iComix, which handles common file formats and displays your entire collection on a single digital shelf. Without an extensive menu or store to purchase titles from, iComix is refreshingly streamlined. It shows your ePUB, PDF, CBR, and CBZ files on a single page, with the option to organize your issues into lists—you can separate issues by publisher, author, or another label.



MADEFIRE

go.macworld.com/mdf

Madefire is an up-and-coming best-seller when it comes to reading comics on your iPhone or iPad. With an internal store stocking a wide range of content from Marvel, DC, IDW, Top Cow, Valiant, Archie Comics, and Dark Horse, Madefire has something for everyone. And although there aren't huge libraries of content from each publisher, the varied amount of titles and genres make it worthwhile. The cost of individual comics is similar to the price of physical issues from shops, with prices circling the \$3.99 range. But if you're just looking for free stories to read, IDW has 101 free issues available right now.



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TEN MUST- HAVE APPS FOR YOUR NEW iPhone

WHAT SHOULD YOU
DOWNLOAD AFTER
YOU INSTALL YOUTUBE,
INSTAGRAM, AND
SNAPCHAT?

BY JASON CROSS

You just got a new iPhone, you're done setting it up ([go. macworld.com/tp10](https://go.macworld.com/tp10)), and it's time to hit the App Store. Which apps should you download to really make your iPhone great?

Obviously, there are the go-to standards that nearly everyone seems to have on their phone: Facebook, Twitter, YouTube, Instagram, maybe Netflix or Amazon...you don't need a list of suggestions to tell you about those household names. If you're new to the iPhone, or just looking to find some new favorite apps, you should also consider these ten gotta-have-it suggestions.

1. SHORTCUTS

FREE, [GO.MACWORLD.COM/SHCT](https://go.macworld.com/shct)

It's weird that Apple touted the Shortcuts app as one of the key features of iOS 12, but doesn't install it by default. You have to go to the App Store to grab it.

The Shortcuts app lets you create pre-programmed sequences of actions using the built-in functions of your phone and supported apps, and then trigger them with a custom Siri phrase or the tap of a button. You can even add shortcuts as icons on your

home screen.

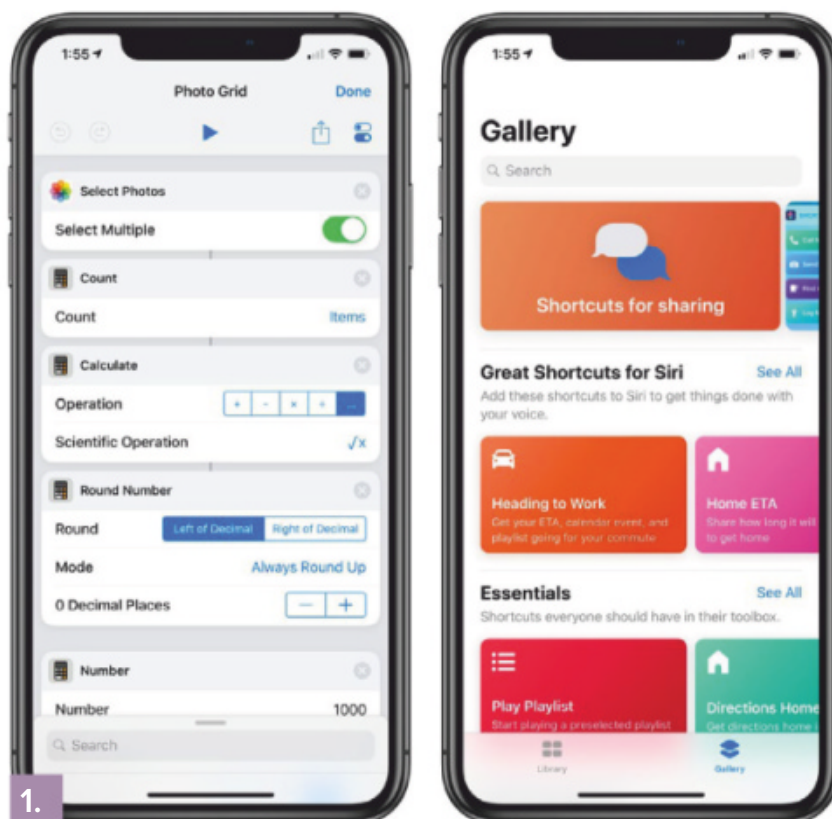
You don't have to make your own shortcuts, either. There's a big gallery of user-made actions to get you started. Check our list of some of our favorite shortcuts for awesome ideas ([go. macworld.com/fvsh](https://go.macworld.com/fvsh)).

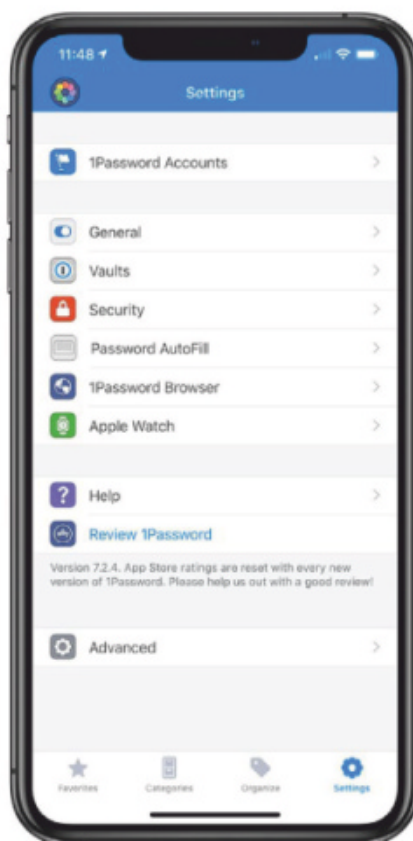
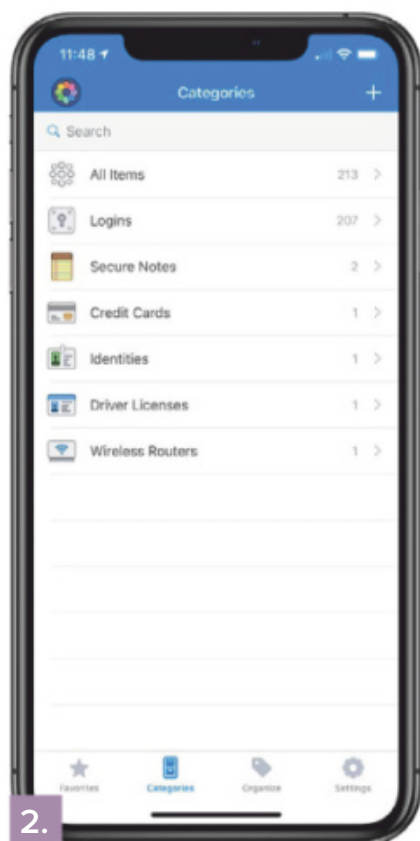
2. 1PASSWORD

FREE, IN-APP PURCHASES, [GO.MACWORLD.COM/1PAS](https://go.macworld.com/1PAS)

If you don't have a password manager, get one. Password managers make it easy to practice good password habits, like using long and complex passwords that are unique to every service and site.

With iOS 12, Apple made password managers even better—they can automat-



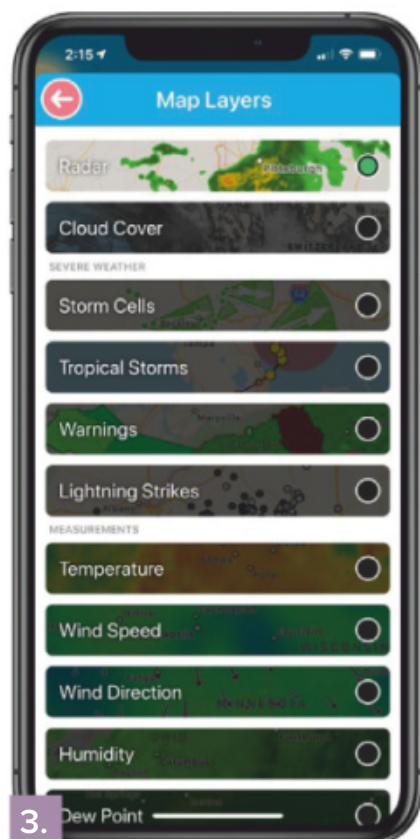


ically fill in passwords and forms in more places, including in apps, and you can authenticate with Face ID or Touch ID.

1Password is one of the best password managers around, with great support on multiple platforms and a very reasonable price (there's a 30-day free trial, then it's \$3.99 per month or \$6.99 for a family of five).

3. CARROT WEATHER

\$4.99, IN-APP PURCHASES, GO.MACWORLD.COM/CRWT



Pay actual money? For a weather app? But you already have a weather app on your iPhone! And other apps are free!

Sometimes quality is worth paying for. If you're the kind of person who checks the weather on your phone almost every day, Carrot Weather is well worth the cost. It's fast, well-designed, and packed with features and customization options. There are multiple Apple Watch complications, a home screen

widget, and a fun iMessage app.

To really unlock its full potential, you have to subscribe to the Premium Club, but that's cheap: only about \$2.99 per year. It's meant to cover the cost of API access to various weather sources. Did I mention you can choose from multiple different weather data sources? Or that it has awesome weather maps with lots of layers? Or that it's ad-free? Or that a snarky AI voice will speak to you?

4. OVERCAST

FREE, IN-APP PURCHASES, GO.MACWORLD.COM/OVER

Apple has its own Podcasts app installed by default, but it's pretty bare-bones. If you enjoy listening to podcasts, or want to get into them, you should check out Overcast instead. It has a nicer interface and a whole bunch of useful features like voice boost and playback speed adjustment.

It supports Apple Watch (with stand-alone playback) and CarPlay, and has nice rich notifications, too. Overcast is a free ad-supported app, but you can eliminate ads with a \$9.99-per-year subscription.

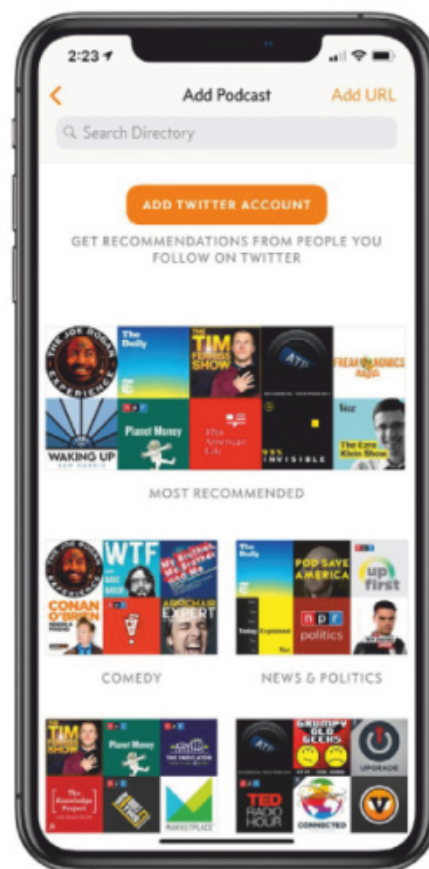


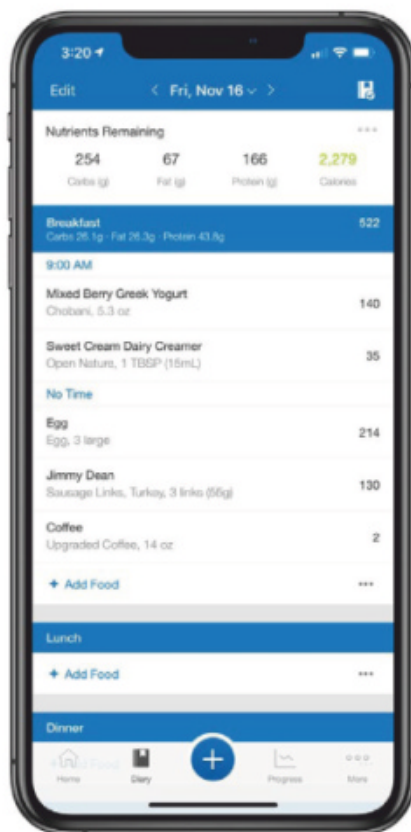
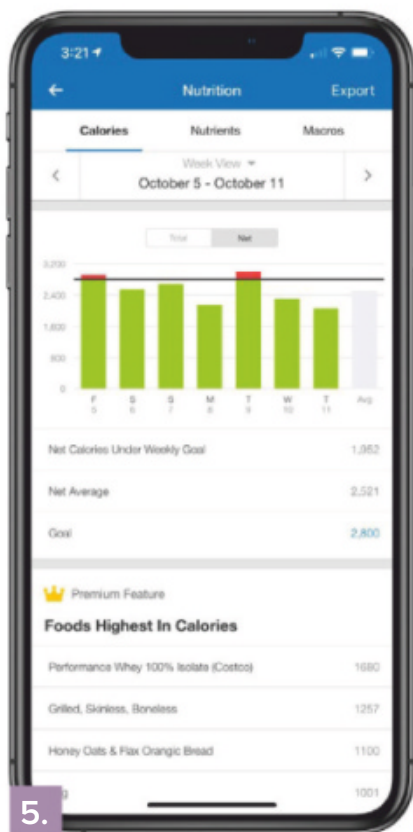
5. MYFITNESSPAL

FREE, IN-APP PURCHASES, GO.MACWORLD.COM/MYFT

Whether you're trying to lose weight, get in shape, or just live a healthier life, the one thing that has been proven to work time and again is keeping a food journal. Counting calories and nutrients is a huge pain, but MyFitnessPal makes it easy.

It has a huge database of common foods and you can just scan the barcode of almost any packaged food item to add it to your daily count. You can do all this with the free ad-supported app, but a \$9.99 per month Premium subscription kills the ads and gives you lots of control over custom macronutrient goals and historical analysis





of your eating habits.

This is the most full-featured and easy-to-use app we've found for keeping track of your diet. And keeping track of what you eat and drink is the first and most effective step toward being healthier.

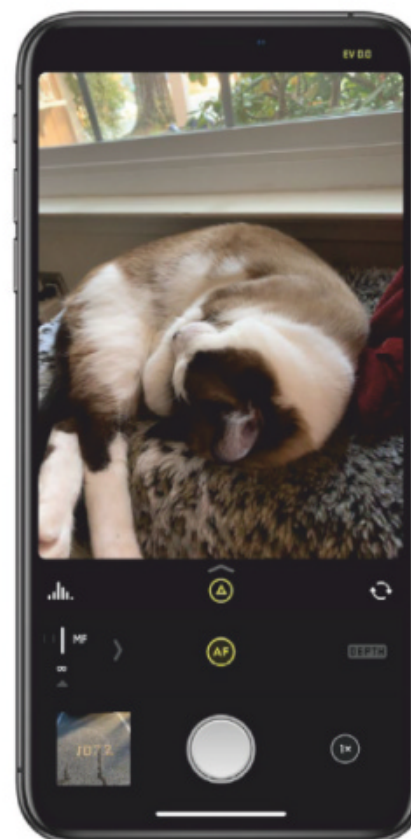
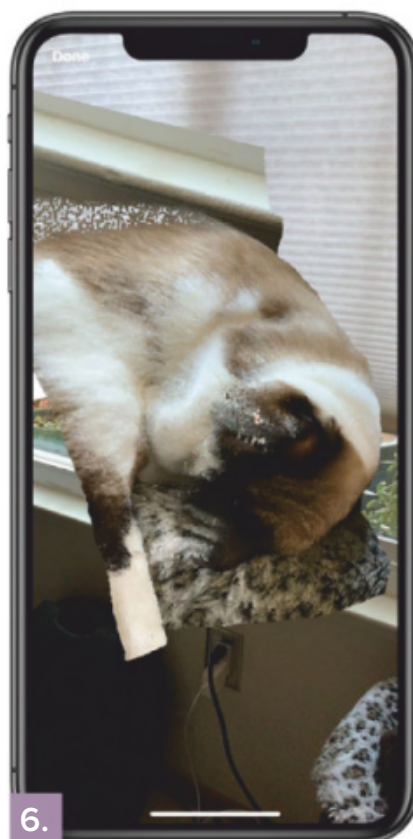
6. HALIDE CAMERA

\$5.99, IN-APP PURCHASES,
GO.MACWORLD.COM/HLCM

The built-in Camera app gets the job done, but when you're ready to move beyond it, we suggest Halide Camera.

It has lots of features that serious photographers will love, like focus peaking, live histogram, and RAW image capture. On the iPhone X series phones, you get fine control over portrait mode, including a nifty augmented reality point-cloud visualization that helps you understand the depth your camera captures.

For all its impressive features, Halide remains simple and elegant, with easy one-hand operation.



There are several great third-party camera apps for the iPhone, but you should try Halide first.

7. JUST PRESS RECORD

FREE, IN-APP PURCHASES, [GO.MACWORLD.COM/JUST](https://go.macworld.com/justpressrecord)

You would never guess how useful it is to have an app that turns your iPhone into an audio recorder. That might seem like the sort of app that's so simple, you should never pay for it, but you'd be wrong.

But Just Press Record justifies its \$5 price with fantastic performance and stability, a slew of useful features, and a clean ad-free

interface. It creates high quality recordings and syncs them to the cloud (if you want). You can record from your iPhone microphone, AirPods, or external sources, and tweak recording settings if you really know what you're doing. It's got a nice dark mode, and really excellent Apple Watch support. Best of all, your recordings can be quickly and automatically

transcribed, with support for over 30 languages.

Whether you're recording and transcribing interviews or just making audio notes, the speed, quality, and versatility of Just Press Record comes in surprisingly handy.

8. THINGS 3

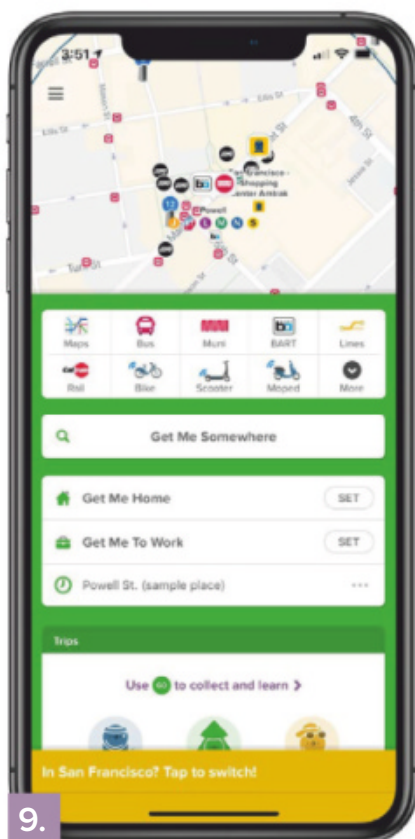
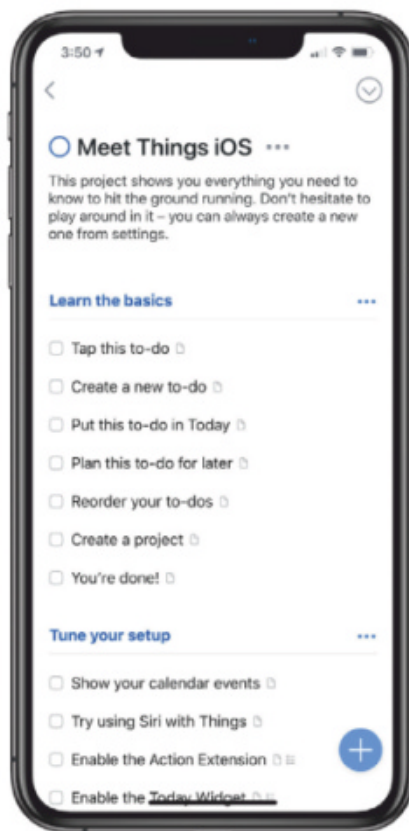
\$9.99, [GO.MACWORLD.COM/THIN](https://go.macworld.com/things3)

Things is a task manager par excellence. If you're trying to get your life in order and stay on task, you'll fall in love with its clean and clear design. In fact, Things won an

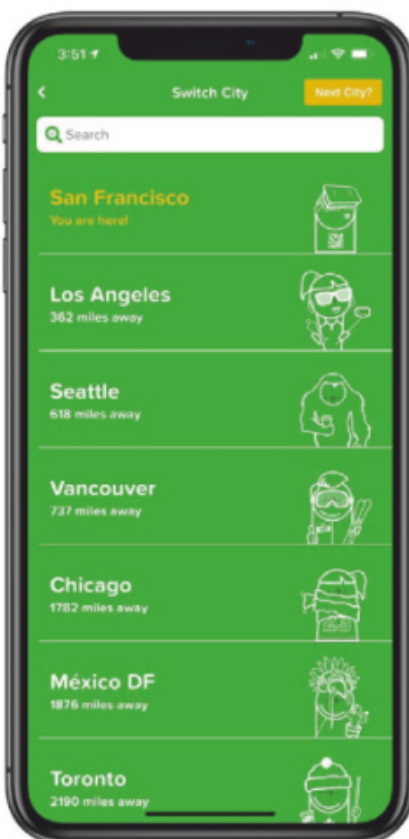




8.



9.



App Store Editor's Choice award and an Apple Design Award in 2017. It has the right balance of easy-to-use and powerful features. It's the poster child for working well with all the technologies Apple builds into iOS: Handoff, Siri Shortcuts, dynamic Notifications, home screen widgets, 3D touch, you name it.

Things makes it easy to keep on top of your obligations, chores, and tasks. If there's a downside, it's the price. At \$9.99 for the iPhone and Apple Watch, Things is pretty pricey, and it only gets worse if you want to spread it to the rest of your Apple devices—the separate iPad version is \$19.99 and the Mac version is \$49.99!

9. CITYMAPPER

FREE, [GO.MACWORLD.COM/CTMP](https://go.macworld.com/ctmp)

There is no transit app as full-featured, powerful, and elegant as Citymapper. It pulls data from a bunch of transit agencies and creates a cohesive, unified, clear

picture of how to get around the city. Know when that next train is coming. Figure out exactly how much it will cost to get you from point A to point B. Know exactly what stop to get off at, and even get a notification to remind you as you approach it.

Citymapper combines busses, subways, trains, and even bike and scooter rental services. It's a one-stop, all-inclusive city transit wonder app. However, it only works in about two dozen cities. If you live in (or will be visiting) Los Angeles, New York, San Francisco, Seattle, Chicago, or one of about 20 other major metros around the world, it's an absolute life-saver. If not, there's simply no point to it.

10. NIGHT SKY

FREE, IN-APP PURCHASES,
[GO.MACWORLD.COM/NSKY](https://go.macworld.com/nsky)

You don't have to be an astronomy geek to love Night Sky. If you've ever looked up at night and wondered, "What star or planet is that?," you're going to love this app.

Of course, it allows you to point your phone at the sky and see a map of

everything in the heavens. All the astronomy apps have done that for years now, but Night Sky expands on that with notifications about when to see your favorite stellar objects or events like meteor showers, a slick augmented reality viewer that lets you see the depth of constellations and 3D models of satellites, and grand Sky Tours.

With Siri Shortcuts support, you can point your phone at a star (without even having the app open) and say "Hey Siri, what star is that?" and you'll get a detailed card with the answer. It feels like the future! ■





TEN MUST- HAVE APPS FOR YOUR NEW APPLE WATCH

TAKE YOUR LITTLE
WRIST COMPUTER TO
THE NEXT LEVEL WITH
THESE GREAT APPS.

BY JASON CROSS

The Apple Watch is great right out of the box, but you'll want to add a few apps to really make it sing. Apple's wearable is a true marvel, especially the Series 4 (go.macworld.com/s4), but you'll never know just how useful it can be if you don't expand your horizons a bit.

When we think about the Apple Watch apps we just can't live without, these are at the top of the list. Some are free, some are not, but every single one is worth your while.

1. AUTOSLEEP

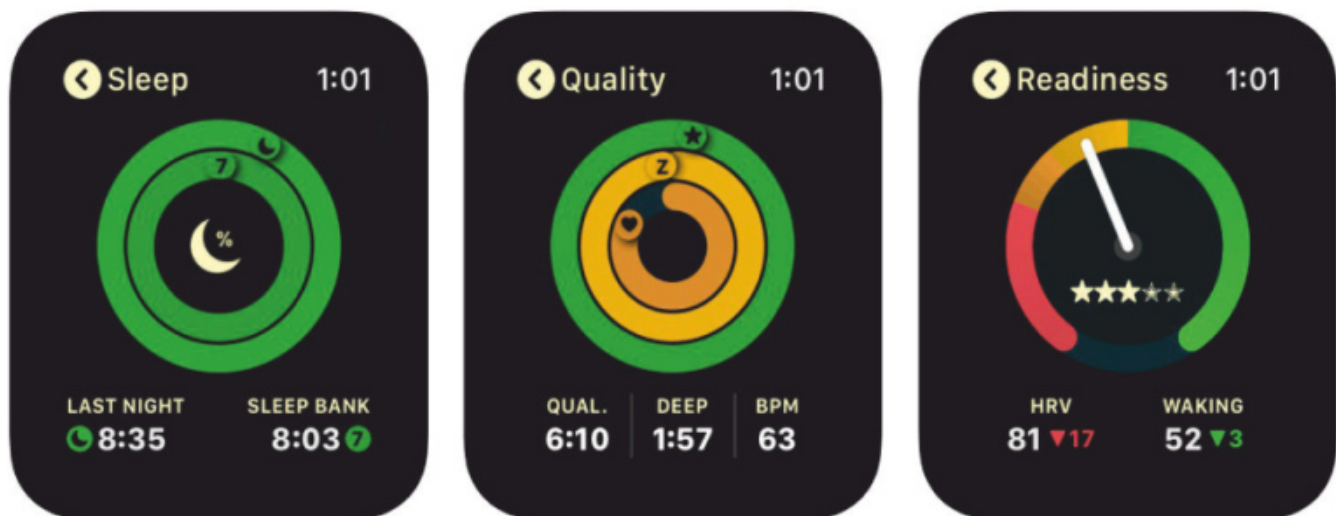
\$2.99, [GO.MACWORLD.COM/ASLE](https://go.macworld.com/asle)

If there's one major feature missing from the Apple Watch, it's automatic sleep tracking (go.macworld.com/aust). Fortunately, it's not that hard to add with an app like AutoSleep (go.macworld.com/asle), or Pillow (go.macworld.com/pil). Of those two, we think AutoSleep's new simpler interface gives it the edge over Pillow.

Pillow is a little more full-featured (it can do some sleep tracking stuff using

just your phone), but you need to buy the \$4.99 in-app purchase to really make use of it. If all you care about is using your watch for sleep tracking, AutoSleep is the cheaper option, and gives you data that's easier to parse.

With either app, you'll have to do a bit of setup and calibration to get good results, but it's worth it. Just charge your watch in the evening and wear it to sleep—your battery will probably still last through the whole next day.



AutoSleep is our favorite app for adding automatic sleep tracking to the Apple Watch.



Carrot Weather isn't free, but it's great.

2. CARROT WEATHER

\$4.99, IN-APP PURCHASES, [GO.MACWORLD.COM/CWE](https://go.macworld.com/cwe)

There are plenty of good weather apps out there, many of which support the Apple Watch, but Carrot Weather may be our favorite. It combines excellent weather forecasting (with data from Weather Underground or Dark Sky), lots of customization, a funky Augmented Reality mode, and even achievements. The snarky evil robot voice helps make weather fun.

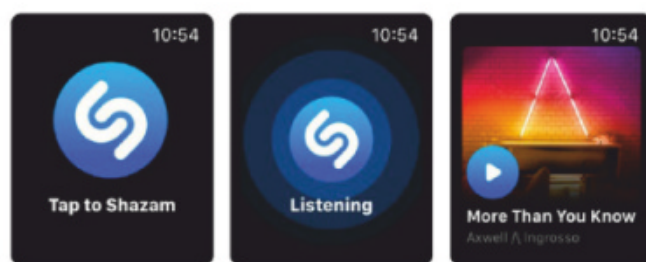
Apple Watch support is especially robust, with several different complications available and the ability to customize them in the app. Carrot Weather was one of the first third-party apps to make use of the new corner complications on the Apple Watch Series 4, and it gives you a card on the Siri watch face, too.

The only downside is that the app costs \$4.99, and then for certain features you have to subscribe to a Premium Club membership for \$0.49 a month or \$3.99 a year. The cost is to cover the increased API usage of its data sources for features like precipitation warnings.

3. SHAZAM

FREE, [GO.MACWORLD.COM/SHZ](https://go.macworld.com/shz)

Shazam is the number one name in identifying music. I mean, it's so associated with being able to "name that tune" that there's even a game show with Jamie Foxx (go.macworld.com/jf).



Apple hasn't done much with Shazam, but it's still the best song-ID service around.

Apple bought Shazam (go.macworld.com/absz) in September and didn't do anything other than remove ads from the app, which just makes it better. We figure the company has big plans for the Shazam technology, but in the meantime, it's an excellent app for your Apple Watch. Just tap that Shazam complication and the app immediately loads up and starts listening. You can use the iPhone app to go through the history of songs you've found and add them to Apple Music or Spotify.

Having the ability to identify songs on your wrist makes you use it a lot more than having to pull your phone out.

4. PCALC LITE

FREE, IN-APP PURCHASES, [GO.MACWORLD.COM/PCLI](https://go.macworld.com/pcli)

It's almost weird that there's no calculator app built in to the Apple Watch. Your



How weird is it that the Apple Watch has no built-in calculator app?

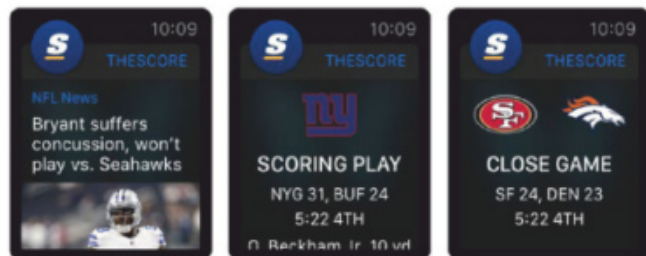
iPhone has one, and calculator watches were sort of the first “smart watches.”

PCalc is our favorite advanced calculator app for iOS (go.macworld.com/cios), and it comes with a great Apple Watch app. It costs \$10, but if all you want is to add a simple calculator to your wrist, we suggest the free PCalc Lite (go.macworld.com/pcli). The advanced features and customization of the paid version mostly just benefit iPhone and iPad users.

5. THESCORE

FREE, [GO.MACWORLD.COM/TSCO](http://go.macworld.com/tSCO)

If you're a sports fan, the Apple Watch is a great device for keeping up-to-date on the latest news and scores. And theScore app



TheScore is the best free app to keep on top of your favorite teams.

(go.macworld.com/tSCO is our favorite way to do it. Totally free and completely customizable, the app will keep you up to date with news and scores for all of your favorite teams, whether you follow the pros or amateurs.

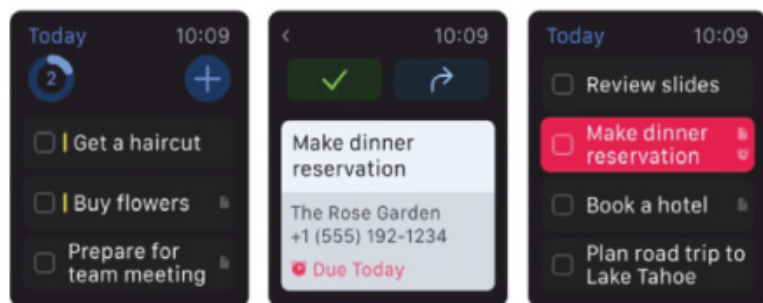
You can see in-game action, plays, and, of course, score updates as games are going on, as well as check out upcoming games right on your wrist. If you can't be in front of the TV, it's the next best thing.

6. THINGS 3

\$9.99, [GO.MACWORLD.COM/THI3](http://go.macworld.com/THI3)

Things is one of the most well-received task managers around, and it's easy to see why. It's attractive, simple, clear, and easy to use. It does what any good task manager should: makes it easy to jot down a new task, clears what it is you have to do today, and stays out of your way the rest of the time. It's an Apple Design Award winner, and it shows.

Things on the Apple Watch is great. Quickly add a to-do item to organize later



It seems crazy to pay \$10 for a task manager app, until you use it and it changes your life.

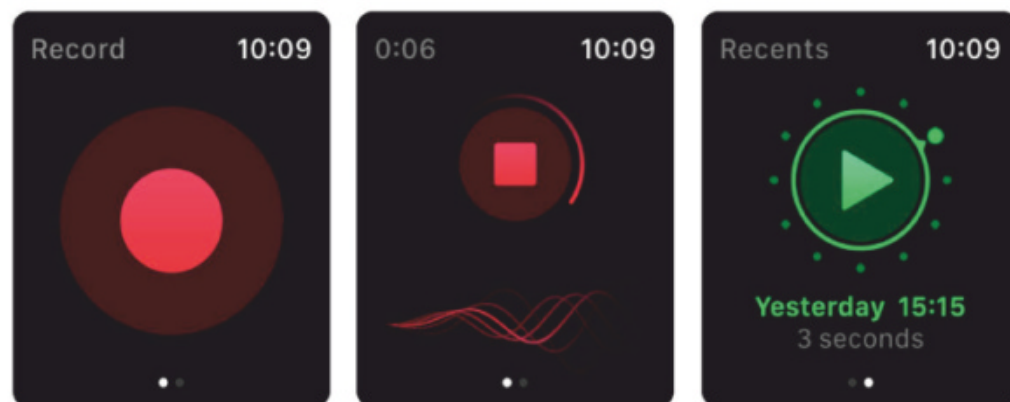
on your iPhone. Look at today's tasks, check off items as you do them, or postpone them for later with just a couple taps. It supports the Siri watch face, which is the perfect place to get daily task reminders.

Things isn't cheap. At \$9.99, it's one of the more expensive iPhone apps of its type. But a really good task manager will save you time and help you get more done, without feeling frustrated and overwhelmed. That's worth the price of a couple cups of coffee.

7. JUST PRESS RECORD

\$4.99, [GO.MACWORLD.COM/JPR](http://go.macworld.com/jpr)

It's an app where you press a button and it starts recording, press it again and it stops.



You'd be surprised how useful it is to have a cloud-synced pocket recorder on your watch.

And for this you'll pay \$4.99?

Yes, yes you will, because Just Press Record is awesome. It's lightweight, fast, reliable, and powerful. It'll transcribe speech to text in over 30 languages. It syncs to iCloud. You can record super high quality from external microphones.

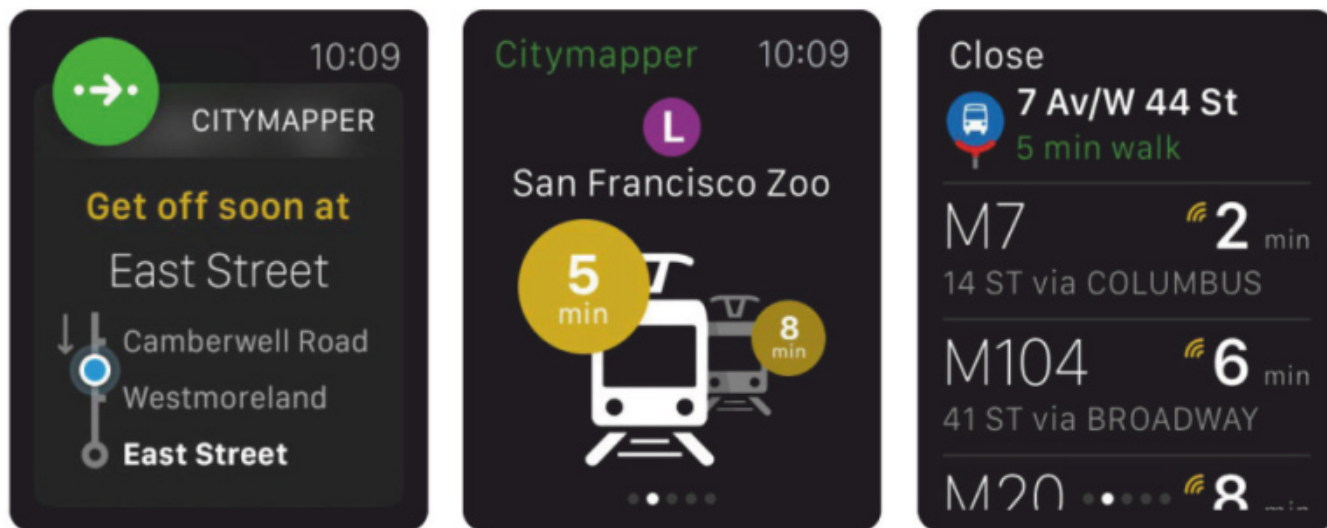
And the Apple Watch makes it even better. Tap its complication and it launches and starts recording immediately, so you never miss a beat. It can record directly to the watch even when your phone isn't around (it'll sync up later). Adjust volume with the digital crown. Start recordings with Siri. Playback recordings through AirPods or your watch speaker.

You just don't realize how useful a really well made one-touch recording feature is until you have it.

8. CITYMAPPER

FREE, [GO.MACWORLD.COM/CMA](http://go.macworld.com/cma)

Citymapper is absolutely an amazing transit app. It gives you bus and subway



If you live in one of Citymapper's supported cities, it is a must-have app.

times, alerts you to service outages, helps you plot trips, and so much more. It works by grabbing public data feeds from dozens of city transit agencies. It's won all kinds of App of the Year awards, and for good reason.

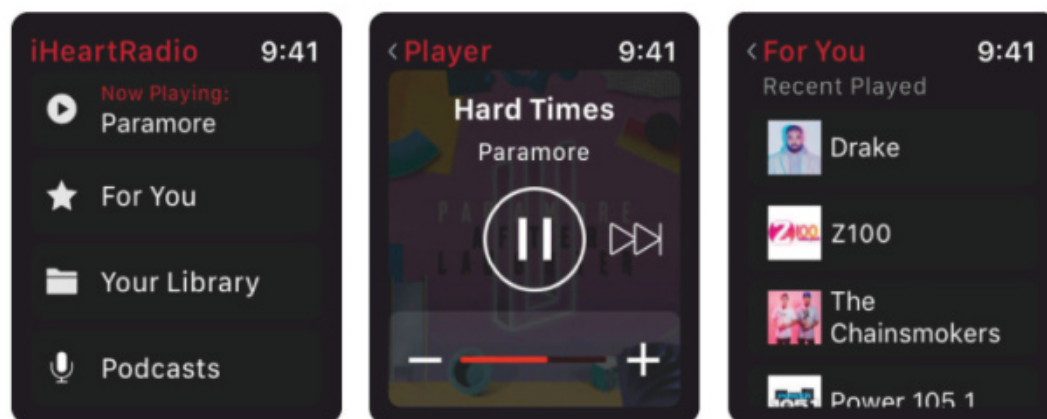
On the Apple Watch it's even better. With a glance at your wrist you can see where to go next, which bus or train to get on, and when it's coming. It can be hard to fiddle with your phone on crowded transit, but a glance at your wrist can show you what stop you're supposed to get off at.

The downside to Citymapper is that, since it relies on public transit data, its only available in a couple dozen cities. It's perfect if you live in, or are traveling to, a huge metropolitan area, but not of much use to anyone else.

9. iHEARTRADIO

FREE, IN-APP PURCHASES, GO.MACWORLD.COM/IHR

You certainly don't need to download an



If you want to listen to FM/AM radio on your phone/watch, iHeart Radio is a great place to start.



VIDEO: 5 MUST-HAVE APPS FOR YOUR NEW APPLE WATCH

Watch now at go.pcworld.com/mha

extra app to enjoy streaming music or podcasts, though iHeartRadio does a fine job with both of those. The real benefit of the app is its library of thousands of global FM and AM radio streams, including sports stations like ESPN Radio and Fox Sports.

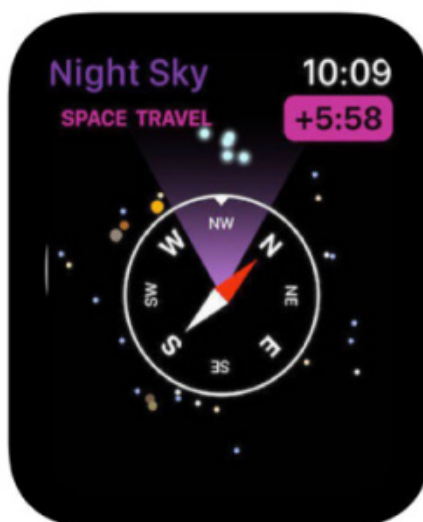
Of course, iHeartRadio offers a lot more. There are tons of popular podcasts, artist and genre stations, and scores of playlists. It's all free and ad-supported, but you can subscribe to iHeartRadio Plus or iHeartRadio All Access to get an ad-free experience with unlimited skips and the ability to save local tracks for offline playback.

10. NIGHT SKY

FREE, IN-APP PURCHASES, [GO.MACWORLD.COM/NSK](https://go.macworld.com/nsk)

Night Sky is one of our favorite iPhone and iPad apps. If you've ever looked up and wondered "what star or planet is that?" then Night Sky is for you. It does so much more, too. There are several slick AR modes, notifications for watching the international space station fly overhead, Siri Shortcuts...you don't have to be an astronomy fan to fall in love with this app.

You might not think a sky chart on your watch would be useful, but you'd be wrong. Just raise your wrist to the sky and move it around to quickly find and identify objects in the sky. When your watch is down, it turns into a sort of "sky compass" that points you in the direction of stuff worth looking at. It's almost like magic. ■



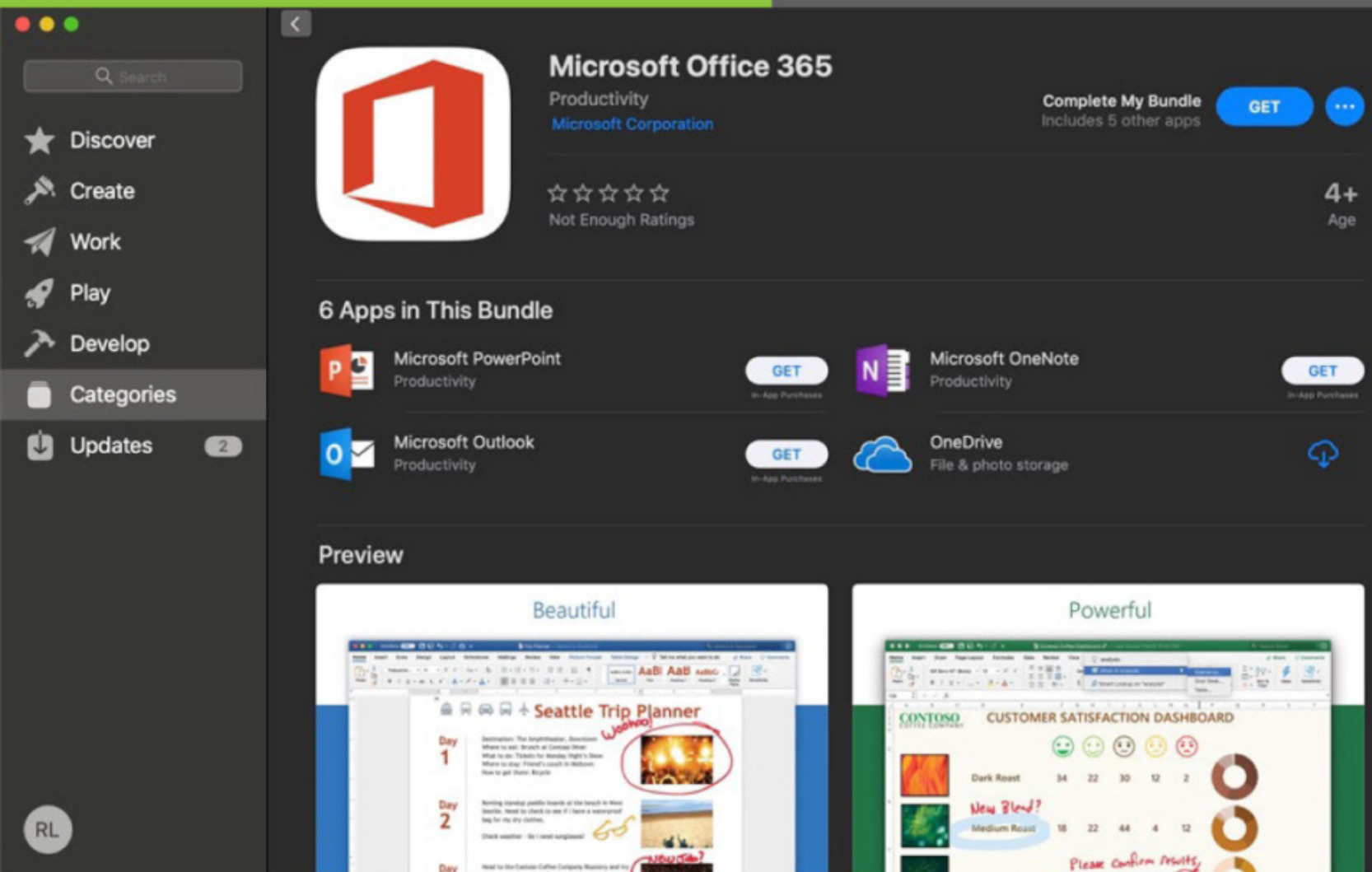
Your Apple Watch can be a surprisingly useful astronomy tool.

A man with a beard and glasses, wearing a white graduation cap and gown, is smiling and looking up at a young girl. The girl is also wearing a white graduation cap and gown with a pink sash and is reaching up to touch the man's face. They are outdoors, with trees and sunlight in the background.

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Microsoft Office 365 apps are now available in the Mac App Store

You can get Word, Excel, PowerPoint, and other Office 365 apps and use your current subscription with them.

BY ROMAN LOYOLA

At the Apple Worldwide Developers Conference keynote (go.macworld.com/ky18) last year, Apple introduced a revamped App Store app. During that unveiling, it was revealed that

the apps in Microsoft Office 365 would be coming to the Mac App Store “later this year.” Well, it didn’t happen in 2018, but if the company meant within a year of WWDC, then it’s on time—Microsoft Office 365 is now available in the Mac App Store.

The Office 365 apps are available from the Mac App Store with a free one-month trial. The full Office 365 bundle includes six apps: Excel, PowerPoint, OneDrive, OneNote, Outlook, and Word, though you can download individual apps. Once the free trial is over, the subscription price for the six-app bundle is \$69.99. If you already have an Office 365 subscription, you can use it.

Here are direct links to the apps in the Mac App Store.

- > Microsoft Office 365 (go.macworld.com/365m)
- > Microsoft Excel (go.macworld.com/mxcl)
- > Microsoft OneDrive (go.macworld.com/mdrv)



At the WWDC 2018 keynote, Apple announced that the Microsoft Office 365 bundle would be available in the Mac App Store.

- > Microsoft OneNote (go.macworld.com/m1nt)
- > Microsoft Outlook (go.macworld.com/mout)
- > Microsoft PowerPoint (go.macworld.com/mpwr)
- > Microsoft Word (go.macworld.com/mwrd)



In a press release from Apple, VP Phil Schiller said, “Apple and Microsoft have worked together to bring great Office productivity to Mac users from the very beginning. Now, with Office 365 on the Mac App Store, it’s easier than ever to get the latest and best version of Office 365 for Mac, iPad and iPhone.” ■

Battlestation alert! Targus's USB-C dock connects four monitors

You'll pay for the privilege though, unless Targus honors the price we were quoted.

BY MARK HACHMAN



If you own a notebook equipped with a USB-C port, you'll want a USB-C hub (go.macworld.com/hubc) to enable legacy connectivity with ethernet or an external HDMI monitor. One external monitor. Wait, you want four? Well, Targus has you covered.

At CES 2019, Targus showed off the DOCK520USZ, also known as the USB-C Universal QUAD HD (QVHD) Docking Station. There's a slew of regular ports, including four USB 3.0 ports, a USB-C port with power, gigabit ethernet, a 3.5mm audio jack, and so on. What's unique about this dock, however, is the four 1080p HDMI outputs, which essentially can be used to

create a multi-monitor battlestation as the video shows. Because who doesn't want to plug into four monitors for work and play?

Though we were quoted \$129 for the dock, that apparently was either a mistake or some sort of CES-specific promotional price—even though the dock is available for sale, it's listed on Amazon at \$275 (go.macworld.com/a275). That's a lot of dough to pay for a dock, even though it enables such marvelous capabilities. Maybe Targus will honor that \$129 price...and maybe not. You might want to check Amazon (and the Targus product page [go.macworld.com/tgpg]) to be sure. ■



Satechi Aluminum Bluetooth Keyboard with Numeric Keypad: Good form, unreliable function

BY LEIF JOHNSON

Products like the Satechi Aluminum Bluetooth Keyboard grant us a peek at the Apple that could be—in this case, an Apple that remains enamored with space gray aluminum but also committed to keyboards with generous key travel. And the Satechi keyboard

is a decent effort, weighty and pleasant for typing, and it lets you pair it with up to three different Bluetooth devices. Viewed from across the room, it readily looks like it spawned in the mind of Jony Ive.

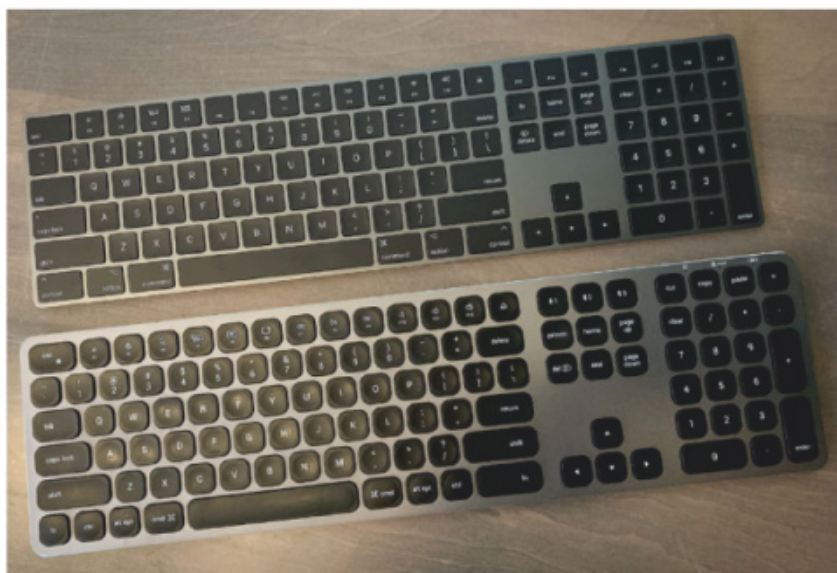
Yet I never felt a strong connection to the Satechi keyboard, mainly because it

always struggled to connect with my Mac.

Maybe we can see this as a reminder that an Apple logo really does translate into quality, but first it's also important to keep in mind that the logo's absence lets you pick up what essentially amounts to a passable cousin of the Apple Magic Keyboard 2 with a keypad for a mere \$79.99. If that sounds expensive, remember that Apple sells its own space gray version for a stunning \$149. You could almost buy two Satechi

keyboards for that price. The Satechi's 17-inch aluminum panel feels weighty and luxurious. At a little less than half an inch high, it sits about as far off my writing surfaces as the Magic Keyboard. Unlike Apple's model, it's also in both gold and rose gold along with the expected white and space gray variations. Battery life isn't all that impressive—Satechi claims it'll go through 80 hours of active use and 100 of inactive before it needs to be charged through its USB-C port—but after I left it in the office for almost two weeks over the holiday, I was pleased to find it greeted me with almost a full charge.

You'd be wrong to dismiss the Satechi as a cheap imitation of Apple's keyboard. This



Both the Apple Magic Keyboard 2 (top) the Satechi Aluminum Bluetooth Keyboard have a caps lock light, but Satechi put its light in the upper-right corner where it's less likely to be hidden by your fingers.

keyboard is aimed at Apple fans who crave better typing experiences than what Apple offers as of late, and as such this board features longer key travel than you'll find on the Magic Keyboard. There's just enough resistance to capture that feeling of creating, something that gets lost on Apple's nearly flat boards. The keys aren't backlit, but I find I like the way Satechi carved a barely perceptible cup for each fingertip into the crown of each key. There's also a playfulness to the keys' rounded corners that I miss in Apple's own work. I'd never call this one of the best Bluetooth keyboards I've ever typed on, but it's a significant enough improvement over Apple's keyboard that I increasingly found myself reaching for it when diving into long writing sessions.



On the back, you'll find a power slider that resembles Apple's own and a USB-C charging port.

CONNECT THREE

The other big reason to buy Satechi's keyboard over Apple's is that it allows you to connect up to three different Bluetooth devices. Not everyone needs this feature, but I find it's particularly well suited to my screwball workflow: Sometimes I'll start a draft on my iPhone with a Bluetooth keyboard (where I'm less likely to get distracted with nitpicking each sentence in the drafting process) and then I'll move over to the Mac to edit. With this keyboard, the means of input never changes.

I'd forgotten how liberating this can be. Apple's own Magic Keyboards don't allow you to pair with multiple devices; in fact, they resist all attempts to pair with an iPhone while they remain wedded to their parent Macs. The only way to divorce the two

is to go into the Mac's settings and "Forget" the keyboard, and that's impossible if you've stuffed it in your bag for use with your iPad or iPhone over a long trip. With the Satechi, it's just a matter of holding down a button.

If only everything else worked so well. On tight deadlines, I'd end up shoving the Satechi aside in frustration when it refused to reawaken with a simple key press after a few minutes of rest. Holding down a random key for several seconds often sufficed to wake it up, but it wasn't guaranteed. Worse, wiring it to the Mac doesn't improve the responsiveness as the Satechi keyboard continues to work through Bluetooth even while charging.

At one point I couldn't even get the Satechi keyboard to work even though it showed as connected in my Mac's Bluetooth panel and I'd fiddled with all three connection keys. I tried charging



Satechi's keyboard (left) has a slightly more steeper incline than Apple's Magic Keyboard.



Even in the underside is pretty sleek.

it for an hour. Nothing. Even a restart didn't help. I simply unpaired it and started over.

This happened three times. I was tempted to blame it on the crazy number of Bluetooth devices we keep running in the office, but the problem persisted even when I took the Satechi home. There were also times when Bluetooth lag would cause letters to repeat themselves or simply not appear.

BOTTOM LINE

When the Satechi works, it works great. The words flow from my fingers over keys that are punchy and weighty. I'd even go so far

as to say that I prefer its design over Apple's own.

But the key feature of any Bluetooth keyboard should be its ability to spring to life on demand. If it fails at that, the comfort of the keys barely matters.

I've long scoffed at the name of the Magic Keyboards, but after a couple of weeks with the Satechi Aluminum Bluetooth Keyboard I see where Apple is coming from. Apple's keyboards are so magically responsive that I sometimes feel as though I could breathe on them and they'd be ready for typing.

With the Satechi? I'm usually just holding my breath. ■



Satechi Aluminum Bluetooth Keyboard with Numeric Keypad & 3-Device Sync

PROS

- Sleek design that looks like something Apple might have made.
- Connects up to three Bluetooth devices at once.
- More satisfying key travel than Apple's own keyboards.

CONS

- Undependable Bluetooth connection, both for typing and reactivating.

PRICE

\$79.99

COMPANY

Satechi

Koogeek O1US Smart Surge Protector: A power strip for the HomeKit set

BY CHRISTOPHER NULL



While smart outlets are rapidly becoming a dime a dozen, smart power strips remain a bit more uncommon. Koogeek's O1US expands the alternatives beyond what TP-Link's Kasa Smart (go.macworld.com/O1us) offers, but comes up a bit short in comparison.

First let's look at the hardware: The O1US includes three independently controllable three-prong outlets, plus three always-on USB charging ports. Two of these USB ports (labeled "iPhone/iPod") are rated for just 1.0 amps each, while the third (labeled "iPad") is a 2.1-amp socket.

The lower-power USB ports are a head-scratcher, but the power outlets are an even bigger issue. With just three outlets, the O1US simply doesn't give you room to grow. Competing smart surge protectors almost invariably include four power outlets or more (the Kasa Smart offers six). This limitation alone will be a deal-breaker for many would-be users.

Aside from that, the O1US is surprisingly fully-featured. It's a HomeKit device, so Apple users will find setup via Wi-Fi to be as easy as a scan-and-sit-back operation. I encountered no trouble at all getting the unit to join my home network, and after downloading Koogeek's app and setting up an account, I was able to configure each outlet, rename them, and set up schedules without any trouble. Power consumption monitoring is included in the Koogeek app, and daily usage history is kept for two years.

Koogeek's app interface is a little goofy, though with a little patience you can find what you need. Scheduling is found under an option called "Setting Timer," and in this interface you'll find options allowing each outlet to be set

with up to seven configurable schedules. Setting a timer is easy enough, but again, some polish is in order: Schedules are configured on a 12-hour clock, for example, but the app displays your active schedules on a 24-hour clock.

SMART SPEAKER SUPPORT

The Koogeek O1US supports both Alexa and Google Assistant, and I had no trouble adding the surge protector to my Alexa system, at least after I found the right skill to download. Koogeek has two, and the one you want is called "Koogeek Smart Home (Not work with P2)." That is not a typo on my part.

Aside from the three-outlet limitation and the two low-powered USB ports, the other major problem with the Koogeek O1US is its price: \$70 at press time makes it only \$10 cheaper than TP-Link's superior product, but it's more than double the price of competing smart outlets that have four outlets. It might have marginally better features than most of those, but it's still a tough sell—particularly given that most users will probably need to buy two to equip the typical surge-protector environment. ■



Koogeek O1US Smart Surge Protector

PROS

- Easily accessible manual on/off switches and indicator lights.
- Energy monitoring features built in.
- Appealing design.

CONS

- Very expensive for the number of outlets offered.
- Two of its three USB charging ports deliver only 1.0 amps each.
- Mobile app could use some polish.

PRICE

\$63

COMPANY

Koogeek

**1 IN 3 ADULTS
HAS PREDIABETES.
COULD BE YOU,
YOUR BARBER,
YOUR BARBER'S
BARBER.**



**WITH EARLY DIAGNOSIS,
PREDIABETES CAN BE REVERSED.
TAKE THE RISK TEST.**

DoIHavePrediabetes.org





AirPlay 2 and HomeKit support is coming to smart TVs, including those from Vizio, Sony, and LG

Samsung isn't the only one working with Apple.

BY JASON CROSS

Apple fans don't typically have a lot to look forward to from CES, but we were treated to a surprise announcement from Samsung (go.macworld.com/itvd) that it will bring the iTunes video store to its smart

TVs, complete with Bixby support. But Samsung isn't the only TV maker working with Apple—AirPlay 2 and HomeKit support are coming to other smart TVs.

Apple has updated its AirPlay page (go.macworld.com/p14y) with a focus on TV

entertainment and special mention of smart TV support. What's more, individual TV manufacturers have started to announce support for AirPlay 2 and HomeKit.

In LG's announcement of its new Signature OLED R TVs, it announced support for AirPlay 2 and HomeKit.

Users can use their own voice to get things done with Amazon Alexa, a new addition to LG's AI TV lineup in 2019, and the support of Apple AirPlay 2 and HomeKit. With AirPlay 2, users can easily play videos directly from their Apple devices, iTunes and other video apps, music or photos to their LG SIGNATURE OLED TV R. With Apple HomeKit support, customers will be able to control their LG TV using the Home app or by asking Siri.

While LG's press release is limited to its new high-end rollable OLED TV, we shouldn't expect support to be limited to that model. The AirPlay 2 and HomeKit features are mentioned as part of LG's new Alpha 9 processor (go.macworld.com/a9pr), and LG is promoting the features as coming to most of its 2019 lineup.

Vizio has announced its new SmartCast 3.0 software platform, which will offer AirPlay 2 and HomeKit support. It will come as a software update to existing TVs that support SmartCast Home, which

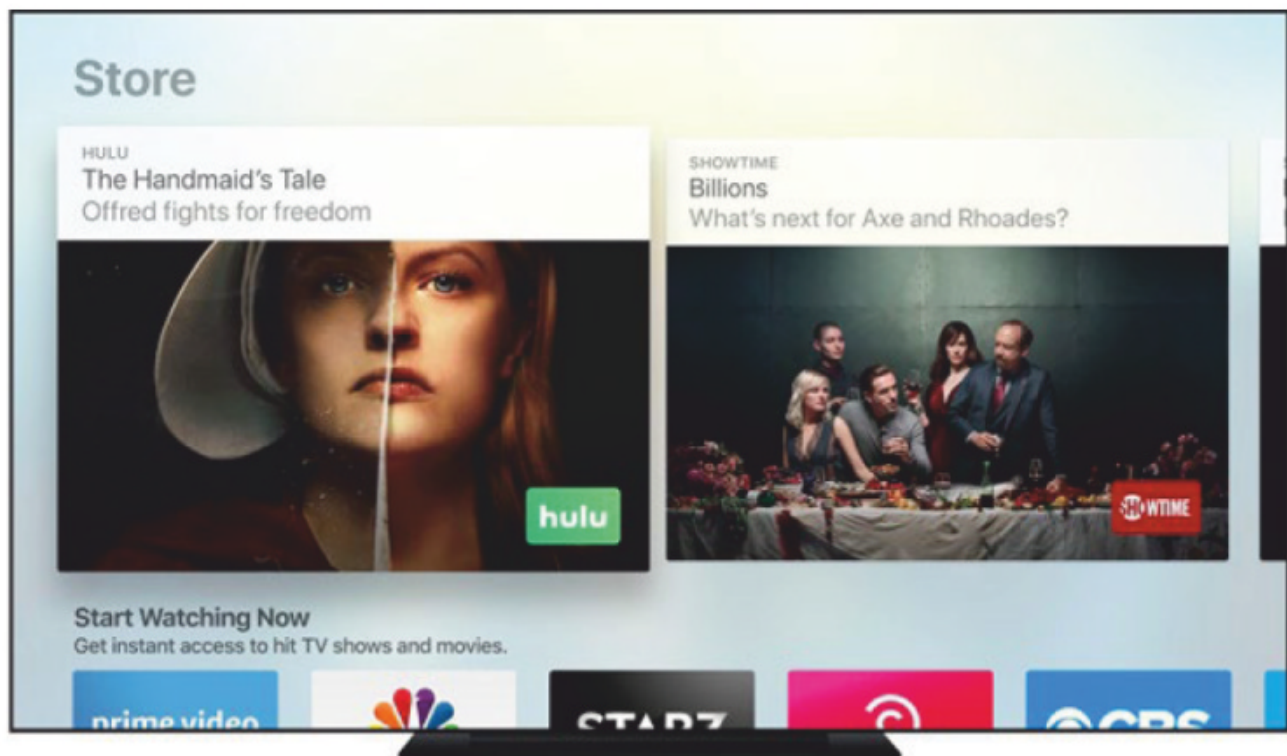
means that millions of existing Vizio TV users will gain these features in a software update. Vizio says the SmartCast 3.0 update will roll out to registered beta users in the first quarter, and to the public in the second quarter.

Sony's new Z9G Series, A9G Series, and X950G Series TVs will support AirPlay 2 and HomeKit as well. The press release (go.macworld.com/aphk) states, "AirPlay 2 and HomeKit support will launch in Z9G Series, A9G Series and X950G Series later this year." Interestingly, the Z9G and A9G Series TVs run Android TV, so you'll be able to control them to some degree using both Google Assistant and Siri.

Apple is pushing to dramatically increase its revenue from services over the next few years, and the expected launch of a video streaming service (with dozens of its own original shows [go.macworld.com/orig] is sure to be a central part of that plan.

For this hypothetical video service to reach a bigger pool of subscribers, Apple has to think beyond its own devices—there aren't enough Apple TV boxes in the world to make a Netflix-like service a big hit. Soon, it's likely we'll see more devices that either offer Apple's services directly (like Samsung) or connect to Apple devices via AirPlay and HomeKit (like Vizio, Sony, and LG).

See which models will support AirPlay 2 and HomeKit on Apple's Home Accessories page (go.macworld.com/hmac). ■



Is Apple's TV streaming service bound for Apple TV competitors?

The Apple Music–Amazon Echo deal could be a sign of things to come for Apple TV.

BY JASON SNELL

Just how big is Amazon's recent announcement (go.macworld.com/ance) that Apple Music is coming to Echo devices (go.macworld.com/musc)? It all depends on if you see it as something larger about how Apple is prioritizing its subscription services compared to its traditional focus on making money by selling hardware.

The cold war between Amazon and Apple seems to be thawing at last.

Amazon's Prime Video app finally arrived on Apple TV late last year (go.macworld.com/late). Apple devices are widely available on Amazon (go.macworld.com/wdav) thanks to a new deal between the two companies. And now there's this new wrinkle, in which Amazon will become the second third-party speaker vendor (after Sonos) to offer support for Apple Music.

The potentially larger wrinkle is the idea that Apple's stated quest to rapidly



Amazon Echo with Echo Sub.

grow its Services revenue line—encompassing the App Store, iCloud, Apple Music, and more, it's been growing every quarter for the last few years—might finally have overridden its decades-long focus on making money by selling hardware with large profit margins.

INCREASING APPLE TV'S REACH AND REVENUE

If Apple Music is on the Amazon Echo, the HomePod no longer holds its exclusivity as a voice-driven home speaker with Apple Music playback. Apple has often used exclusivity to drive hardware sales, which is one reason why you can't watch iTunes purchases on Amazon Fire TV or Roku devices. Now the HomePod needs to compete as a high-end premium

speaker, rather than as literally the only option if you want to give voice commands to an Apple Music-enabled smart speaker.

This is a move that could have huge ramifications for Apple's forthcoming TV service, which has left the Apple TV caught between Apple's current desire to grow services revenue and its classic focus on hardware profit margins. In fact, it brings to mind a similar move from back in 2002 and 2003, when Apple made the iPod compatible with Windows PCs.

At that time, Apple decided that the iPod was no longer a product whose value was in serving the existing Mac market and making the Mac more desirable. It took a lot—and by some accounts, Steve Jobs was against the whole thing—for Apple to shift out of its old cultural assumptions that any Apple product needed to serve the success of the Mac, and embrace the fact that the iPod's success on its own would be more successful than any small boost it might offer Mac sales. (In the end, of course, the iPod became the first positive engagement with an Apple product that millions of people ever had, paving the way for Mac growth and the eventual success of the iPhone.)

Signs are pointing to Apple having the same realization about its services. It's hard to imagine that Apple's investment in more than a billion dollars in content for next year's video-service launch would fail because Apple would limit TV viewing to those who purchased an AppleTV box that costs three times what its competitors do.

Not so long ago, I wrote about the Apple TV needing to get cheaper ([go. macworld.com/stik](http://go.macworld.com/stik)), and that would certainly be a good way for Apple to get its service onto the TVs of people all around the world. But this Amazon Echo announcement makes me wonder if Apple's willing to take an even larger step away from its walled-garden ecosystem.

Picture the TV app. Apple has been building it up over the last few years as the central hub for all of Apple's content, as well as content from third-party services. Apple's vision is that users of the iPhone, iPad, and Apple TV will all use the TV app as their interface for iTunes purchases and rentals, live sports, other services, and of course Apple's own video service.

Now picture the TV app on the Roku and Amazon Fire TV. In one step, Apple would be bringing its ecosystem—not just the future Apple video service, but iTunes movie and TV rentals and purchases, and possibly other video services resold by Apple—to the most popular TV streaming boxes out there. The Apple TV, like the HomePod, would be forced to compete as high-margin “premium” hardware—but Apple's subscription services and à la carte video sales would now be available to a massive audience.

It would certainly increase the number of people who might possibly subscribe to Apple's new video service. And maybe, just maybe, it would be like the iPod, and act as a gateway to bring some of those people further into Apple's ecosystem.

It's a scenario that I never really took seriously, even when writing about this topic recently. But with Apple Music coming to the Amazon Echo now, it's becoming clear that Apple's willing to behave a lot differently than it has in the past to spread the reach of its subscription media services. ■



Can you imagine Apple TV's service on the Roku Premiere?



JBL Xtreme 2: A sturdy Bluetooth speaker that's up for serious partying

BY SCOTT WILKINSON

People are on the go more than ever, and they want to take their music with them. So, it's no surprise that portable, battery-powered, Bluetooth speakers are proliferating like crazy. Among them is the new Xtreme 2 from JBL. Let's find out if it can get the party started during your next outing.

FEATURES

The JBL Xtreme 2 is a nearly cylindrical

unit measuring 11.3 x 5.4 x 5.2 inches (width x height x diameter). The extra height is due to the feet that prevent it from rolling around on a flat surface. It tips the scale at a hefty 5.3 pounds, thanks to its sturdy metal construction and tough fabric covering. It comes with a woven nylon strap (with an inline bottle opener, no less!) that lets you sling it over your shoulder. The Xtreme 2 is available in black, dark blue, or forest green.

Two 2.75-inch woofers and two 0.8-inch tweeters face forward, and two 3.5-inch passive bass radiators face outward from the ends of the enclosure. The four active drivers are powered by an internal amp that delivers 10 watts to each driver (40W total) when the Xtreme 2 is connected to an AC power outlet. That amp power is reduced somewhat when the unit is being powered by the battery, but JBL won't disclose the amp power in that case. The frequency response is specified to extend from 55Hz to 20kHz, with a signal-to-noise ratio of more than 80dB.

Bluetooth is the primary way to feed music to the Xtreme 2. It supports Bluetooth 4.2 using several profiles, including A2DP 1.3, AVRCP 1.6, HFP 1.6, and HSP 1.2. Interestingly, two devices can be paired to the speaker at the same time. When one is playing and you start playing from the other one, the speaker switches automatically. I suppose this could cause some confusion if two people want to play something at the same time.

In addition, the unit offers a feature called Connect+, which lets it broadcast a Bluetooth signal to as many as 100 other Connect+ devices to spread the music around a much larger area. The transmitter power can reach up to 12.5dBm (0.02W) in a frequency range from 2.402- to 2.480GHz using GFSK, $\pi/4$ DQPSK, and



The ends of the Xtreme 2 hold 3.5" passive radiators, which give the bass a boost

8DPSK modulation. You can also wirelessly connect two Xtreme 2s in a stereo pair.

The Xtreme 2 is waterproof as defined by its IPX7 rating. It can survive being immersed in water to a depth of 1 meter for up to 30 minutes, which means it cannot be damaged by splashing water. So go ahead, take it to your next pool or beach party without worrying about getting it wet or even dropping it in the water. JBL doesn't publish a rating for dust incursion.

Finally, the Xtreme 2 can function as a speakerphone with noise and echo canceling. Simply enable that function in the JBL Connect app and push the play/pause button when you make or receive a

call on the paired mobile phone.

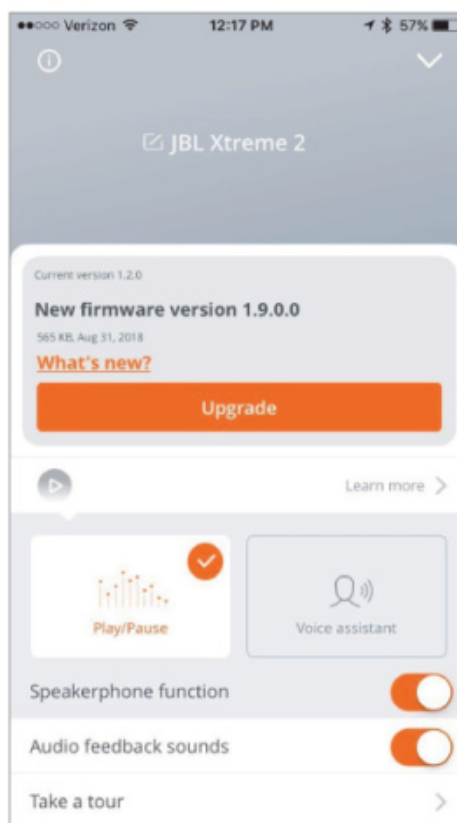
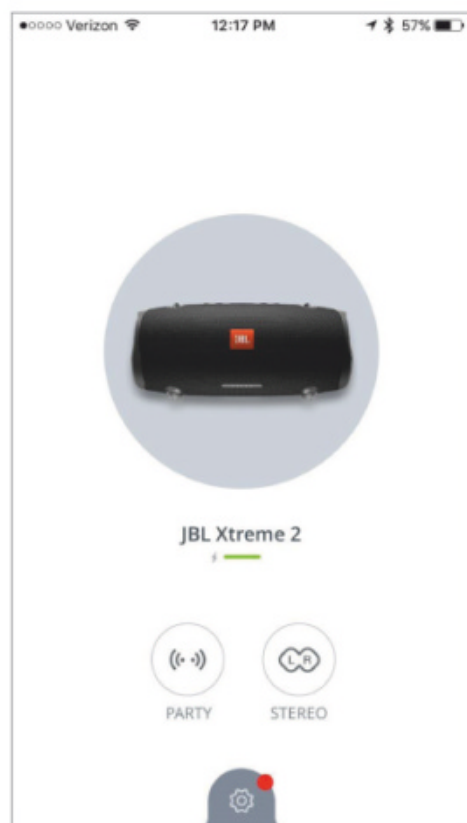
USER INTERFACE

The controls on the top of the Xtreme 2 are simplicity itself. From left to right, they include buttons for Bluetooth pairing, volume down, power on/off, Connect+ activation, volume up, and play/pause, which also lets you skip to the next track by pushing it twice. Five tiny LEDs located on the front near the bottom of the speaker indicate the battery level when you first turn the unit on.

Connections on the back include an analog aux input and a USB port, which can provide up to 5V/2A of power to connected USB devices—though, of

course, that will drain the battery faster. A separate Micro-USB port is used for firmware updates, which seems odd, since updates are normally performed using the JBL Connect app on a paired device. An AC power receptacle rounds out the connections, all of which are found behind a tight-fitting rubber cover. Be sure that cover is closed if you think the speaker might be exposed to water.

The Xtreme 2 even offers voice activation. Once you enable it in the JBL Connect app on a paired device, the play/pause button calls for Siri or Google Assistant on that device. In this case, however, the button does not play or pause the music; you choose one or the



The opening screen of the JBL Connect app (left) lets you engage Party mode (wirelessly connecting multiple speakers) or configure two speakers as a stereo pair. The main screen (right) lets you update the firmware, configure the play/pause button to play and pause the music or activate the voice assistant, enable the speakerphone function, and adjust other settings.

other function. Otherwise, the app is used only for speaker configuration (stereo pairing of speakers or Connect+ group) and firmware updates.

SETUP AND PERFORMANCE

The Quick Start Guide that comes with the Xtreme 2 is quite small with almost microscopic print in about a dozen languages. Fortunately, most of the guidance is given pictorially, so the tiny type isn't that much of a problem. You can also get the guide online, which lets you enlarge it as needed.

Pairing the Xtreme 2 with my iPhone 6 was a snap. After opening the Bluetooth settings on the phone, I pressed the Bluetooth button on the speaker, which caused the power button to flash blue. The first time I tried it, the pairing failed (possibly because my editor had previously paired it with his Android phone before he sent it to me), but it worked the second time, after which the power button was lit steady blue.

I've been listening to a lot of symphonic band music lately, so I started with Grainger's "Lincolnshire Posy," played by Denis Wick and the London Wind Orchestra. The initial volume was so low



The controls are found on top of the speaker, and a row of tiny LEDs at the bottom indicate the battery level.

that I could barely hear anything, but it was fine once I increased the level. The bass was somewhat boomy and overemphasized, especially the tympani and tubas, but otherwise, it sounded pretty good—surprisingly rich for such a small speaker. However, there was virtually no stereo separation, which wasn't so surprising for such a small speaker.

Next up was "Good Lava," from Esperanza Spaulding's album *Emily's D+Evolution*. Esperanza's vocals were quite good—up front and very clean. Also, the bass was much better on this track, well balanced with the rest of the ensemble. In fact, the instruments and vocals all sounded excellent.

My wife, Joanna Cazden, is a singer-songwriter with six self-produced albums. I



The JBL Xtreme 2 is available in a variety of colors.

played all the wind parts on her last album, *Living Through History*, so I know very well what it's supposed to sound like. I listened to "No End to Love," which includes a synthesized woodwind ensemble that I overdubbed playing a Yamaha WX5 wind controller and VL1 wind synthesizer. Overall, the sound seemed a bit closed in, but Joanna's vocals sounded quite good, and the instruments—including acoustic bass and piano—exhibited good definition.

Another album I played on is *A Festival of Renaissance Dances*, by the Southern California Early Music Consort. "Introduction and Courante" features sackbuts (renaissance trombones), cornett (a hybrid instrument with a trumpet-like mouthpiece and finger holes like a

recorder), shawm (renaissance oboe), and large drum. The drum sounded quite boomy, but the instruments were nicely delineated. "Branle" is played on recorders and tambourine, and it sounded sweet on the Xtreme 2.

Returning to the present, I played "Cousin Dupree" from Steely Dan's *Two Against Nature*. The bass was quite boomy, but the drums were very clean. The vocals were good but somewhat overpowered by the bass.

As I was listening, I got a text message on my phone, and the incoming-text sound was very loud as it interrupted the playback. When I replied to the message, the keyboard-click sounds were very loud as well, and they were noticeably delayed,

which made it much more difficult to thumb type. I disabled the keyboard-click sounds in the iPhone's settings, which solved that problem. I could have disabled the incoming-text sound as well, but I'd rather know when a text arrives.

In addition to my iPhone, I also paired the Xtreme 2 with an iPad Mini, which worked fine. But when I returned to the iPhone to do a firmware update, the app wouldn't connect to the speaker. JBL recommended that I quit out of the app, power down the speaker for a minute, and then try again. That worked, but it caused a bit of frustration.

The current firmware version was 1.2.0, and the update was 1.9.0.0. I have read user reviews that report degraded sound quality after a firmware update, so I wanted to see if I had a similar experience. The app instructs you to plug in the AC power adapter and keep the device close to the speaker. After confirming I did that, the update began immediately and took a few minutes to complete.

Listening to some of the same selections as before, I noticed no difference in the sound quality. During this test, I also cranked the volume to see if the Xtreme 2 would distort. Amazingly, it didn't, even though it was way too loud

for my comfort indoors. Taking it outside, I maxed out the volume: At the highest setting, it dropped the level momentarily before blasting. While I didn't hear distortion per se, the tonal balance did seem to change—the bass couldn't keep up with the mids and highs, making the overall sound thinner and brighter.

BOTTOM LINE

The JBL Xtreme 2 is an excellent portable Bluetooth speaker. Setup is a snap, and it sounds surprisingly good for such a small speaker, though the bass can be quite boomy. I wish the JBL Connect app included EQ (even if only simple treble and bass controls), which would help overcome that problem. The Xtreme 2 exhibits virtually no stereo separation by

itself, but you can use two of them as a stereo pair. You can also wirelessly connect up to 100 compatible JBL speakers to cover a very large area.

Its IPX7 waterproof rating means you don't need to worry about getting it wet or even submerging it entirely. And don't forget the bottle opener on the carrying strap, which makes the waterproof rating even more important! The Xtreme 2 is a great way to bring your favorite tunes to your next party. ■



JBL Xtreme 2 Bluetooth speaker

PROS

- Surprisingly good, rich sound.
- Strong weatherization (it's rated IPX7).
- Voice activation and speakerphone functionality.

CONS

- Boomy bass.
- JBL Connect app is rudimentary; should offer EQ.

PRICE

\$222

COMPANY

JBL



Audio-Technica AT-LP120-USB turntable: Listen to your vinyl collection and digitize it, too

BY THEO NICOLAKIS

You need a good turntable to enjoy the warm, intimate sound of vinyl records. But albums and 45s don't make good travel companions, so what's a mobile music lover to do? With

Audio-Technica's AT-LP120-USB turntable, you can listen to your records when you're home, and digitize them for playback on your smartphone or portable digital audio player when you're away.

DIRECT DRIVE DESIGN

The AT-LP120-USB is a direct-drive turntable, which means there's a motor beneath its spindle turning its platter. Direct-drive turntables deliver fast start and stop times and excellent torque, and there's no belt to worry about wearing out over the years.

The traditional drawback in a direct-drive design is that vibrations produced by the motor can be transferred to the platter and record. Many audiophiles prefer belt-driven turntables, where the motor is decoupled from the platter to mitigate this problem. Belt-driven turntables, however, aren't always a good choice for novice turntable users unaccustomed to handling records.

BUILT-IN PREAMP

Most turntables need to be connected to a phono preamplifier that can boost its signal to the level that a regular amplifier can work with. The AT-LP120-USB comes with one built in, rendering it virtually plug-and-play. This means you can connect its line-level output directly to a pair of self-powered speakers, such as Shinola's Bookshelf speakers ([go. \[macworld.com/shin\]\(http://go.macworld.com/shin\)](http://go.macworld.com/shin)) at the high end, or Edifier's S2000 Pro ([go. \[macworld.com/spr0\]\(http://go.macworld.com/spr0\)](http://go.macworld.com/spr0)) if you're working with a more modest budget. In fact, you can use the AT-LP120 out of the box with just about any audio

gear. If you have an A/V receiver in your entertainment center, you can connect this turntable directly to its input.

My Anthem AVM 60 multi-channel pre-pro, for instance, lacks a dedicated phono preamp, so I put the Audio-Technica AT-LP120 into line mode, plugged it into one of the AVM 60's analog inputs, and was playing vinyl through my review pair of RBH SVTR Tower Speakers ([go. \[macworld.com/svtr\]\(http://go.macworld.com/svtr\)](http://go.macworld.com/svtr)) in mere minutes.

If you already have a favorite phono preamp, on the other hand, you can connect this turntable to it, instead. A switch on the AT-LP120-USB's rear has a "line" position that bypasses the internal phono preamp ([go. \[macworld.com/camb\]\(http://go.macworld.com/camb\)](http://go.macworld.com/camb)). I connected the Audio-Technica to a Cambridge Audio Duo phono preamp without issue during this review. Such



Audio-Technica's AT-LP120 USB turntable has an onboard phono preamp, or you can flip a switch and use an outboard preamp. Its USB port can send a digital stream you can capture with a Mac or Windows PC.

flexibility is incredibly handy.

The RCA output cables are hard-wired to the back of the turntable. Higher-end turntables typically give you RCA jacks, so you can supply your own cables and replace them at any time. In addition to limiting where you can set up the turntable in relation to your amplifier or self-powered speakers, repairs will be tricky should the AT-LP120's cable ever become damaged.

The AT-LP120-USB comes with a heavy, cast-aluminum record platter and a cloth slip mat. Its feet are adjustable for leveling the turntable, which is crucial for achieving the best performance from a turntable.

This turntable can play 33-1/3 and 45 rpm records without needing anything extra. The dots on the outer edge of the platter show how fast the platter is spinning. Illuminated by the red light near the power

switch, different rows of dots will appear distinctly depending on how fast the platter is spinning. Take a look at the associated



A light on the turntable's plinth aids in stylus placement in low-light conditions.



The AT-LP120-USB's platter design shows the speed at which the record is spinning. Here, the visible dots on the lower line indicate the record is spinning at 45 rpm.

photos that follow for examples.

Since 45-rpm records have a larger 1.5-inch hole in the middle, they require an

adapter to play on a regular turntable.

Audio-Technica provides one that can be stored in a recess at the turntable's upper

left corner. I can't tell you how many of these adapters I've misplaced over the years, so this is a welcome design element.

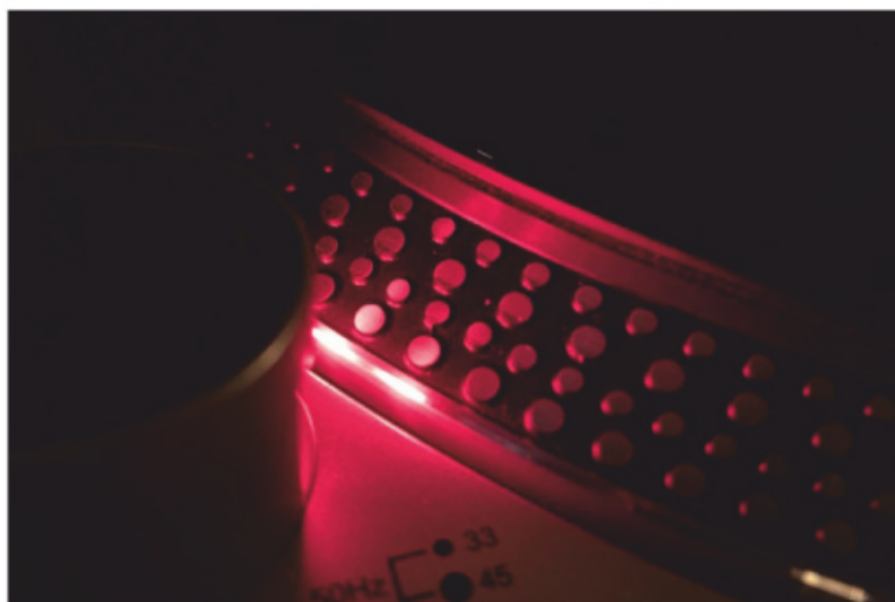
The AT-LP120-USB will also play older 78 rpm records, but you'll need a different cartridge because those records have larger grooves. A stylus with a diameter of 3 mil is required for shellac albums, and a stylus with a diameter of 0.6 mil is needed for vinyl 78s.

There are third-party 78 rpm styli for the AT95E cartridge that comes with the AT-LP120-USB. You can contact Audio-Technica directly for a listing of third-party vendors. You select 78 rpm by pressing the turntable's 33 and 45 buttons simultaneously.

Tone arm assembly height can be adjusted to position the tone arm parallel to the record. If



Audio-Technica's packaging made assembling the turntable a breeze.



The platter has a series of dots arranged in different rows. When playing a record, dots will show up on different rows to let you know the platter speed.



The height of the AT-LP120-USB's tonearm is adjustable.

you're using taller cartridges, thicker slip mats, or are playing older 78s, you can adjust the tonearm in millimeters using the height lock.

Several DJ and pro-specific features increase the AT-LP120-USB's appeal. The direct-drive motor's high torque gets the platter spinning at full speed quickly. It was significantly faster than my belt-driven U-Turn Audio turntable. A button near the tone arm lets you set the platter direction forwards or backwards. You can also adjust the pitch ranges plus or minus 10 percent, or plus or minus 20 percent using the pitch-adjust slide control. There's also a pop-up stylus target light if you're spinning records in a darkened environment.

SETUP AND LISTENING

Setup was a relative breeze. Audio-Technica's packaging neatly laid out everything I needed to get started. I

assembled the platter, slip mat, and dust cover easily. Audio-Technica includes a thick, high-quality dust cover. Take note that the dust cover only opens to about 50- to 60 degrees max. If you try to open it straight up to 90 degrees, you'll snap the hinges.

The headshell secures to the tonearm with a locking ring. As a nod to getting set up quickly, Audio-Technica ships this

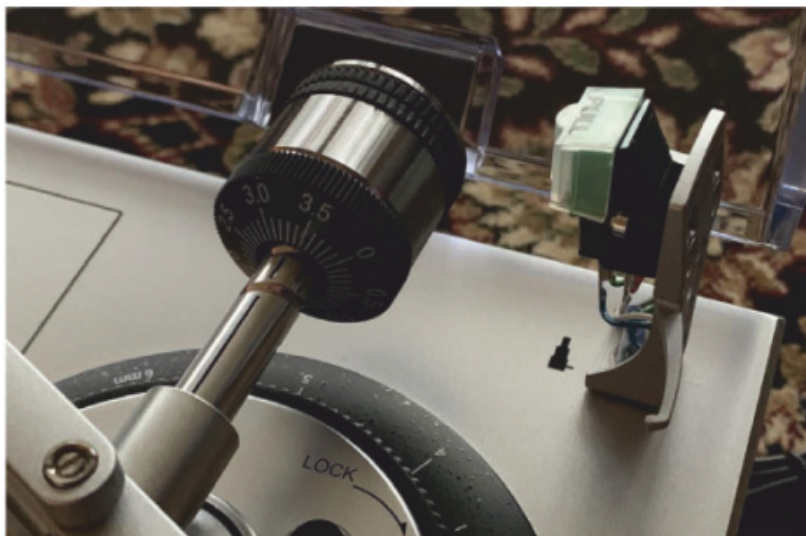
turntable with its cartridge pre-assembled.

The included user manual explains how to use the counterweight to set the arm balance, tracking force, and anti-skate. Take care to calibrate these items properly to set the downward force and vertical tracking, so the tonearm won't skip.

If you're serious about getting the most from a turntable, I recommend picking up a basic stylus-tracking force gauge.



You store the 45 adapter in this indentation in the turntable's plinth when it's not needed.



The plinth has integrated storage areas.

If you want to record music from your vinyl collection, Audio-Technica includes a CD with Audacity software for Mac and Windows. If your computer is one of the many that doesn't have a optical disc drive, you can download the latest version of Audacity from the internet (go.macworld.com/adct). Mac and Windows computers won't need a software driver to work with this turntable.

There's no reaching to find an on-off switch, the button is prominently located on the top left of the plinth. My review system consisted of an Anthem AVM 60 (go.macworld.com/avm6), Cambridge Audio Duo phono preamp, and RBH SVTR Tower Speakers (go.macworld.com/rbhs).

go.macworld.com/rbhs).

Audio-Technica's direct-drive turntable got the platter up to speed in a hurry. The AT-LP120-USB did a fine job on the vinyl edition of *The Greatest Showman*. There was something quite natural in the overall presentation. Playing *La La Land* is always fun. The seductive piano notes on "Mia and Sebastian's Theme" kept their intoxicating quality.

All in all, Audio-Technica's AT-LP120-USB delivered good sound across various musical genres, though (unsurprisingly) this budget-priced turntable lacks the refinement you'll experience with more expensive turntables and cartridges.



Audio Technica AT-LP120-USB

PROS

- Built-in preamp lets you connect to a wide range of equipment, with a bypass switch if you already have a favorite phono preamp.
- Compatible with 33-, 45-, and 78 rpm records.
- USB port makes it easy to digitize vinyl using any computer (no driver needed).

CONS

- Hardwired RCA output cables.
- Direct-drive motor can transfer vibration to the platter.

PRICE

\$299

COMPANY

Audio-Technica

A SOLID SOLUTION

Audio-Technica's AT-LP120-USB is a solid turntable for the entry-level vinyl enthusiast who wants a good-sounding, flexible, no-hassle player. A built-in phono preamp and USB output sweeten the package. Whether you're looking to spin up some records or digitize them, Audio-Technica's AT-LP120-USB deserves a serious look. ■



V-Moda Forza Metallo wireless earphones: These stylish earphones make some genres of music shine

BY SÉAMUS BELLAMY

For over a decade, V-Moda has worked hard to carve a niche for itself in the oversaturated world of personal audio. Sharp angles abound in its audacious headphone and earphone designs. The build quality of its products could be compared to that of the personal audio gear churned out by its British rivals Bower & Wilkins: everything

feels right; everything feels sturdy. When I think of its products, the word “misstep” isn’t one that comes readily to mind.

Unfortunately, it feels like the right word to apply to V-Moda’s Forza Metallo wireless earphones (go.macworld.com/frza), the company’s first attempt at a wireless in-ear audio product. While they offer a lot to like, these earbuds come with

enough quirks that you may feel buyer's remorse.

DESIGN

As they're made by V-Moda, we're not surprised that the Metallo—let's call these earphones that, for the sake of brevity—is both unique and beautiful. The pair I received came in a gunmetal grey color scheme, but they're available in white as well.

Like Bose's QuietControl 30 or Sennheiser's CX 7.00BT, the Metallo sports a neckband design.

However, while the neckbands of these competing earphones are composed of a semi-rigid plastic loop, V-Moda opted for a more elegant option. The battery, Micro-USB charging port, Bluetooth radios, and other electronics that allow the Metallo to be powered up and communicate with your audio source—these are all housed in a lightweight plastic pod that's shaped to sit comfortably on the back of your neck.

Not only is it comfortable to wear, the neck pod also vibrates whenever someone attempts to call you. The “arms”



V-Moda ships the Forza Metallo Wireless with a variety of accessories to ensure a good fit.

of the Metallo's neckband end in two short lengths of thick cable, each of which is capped with in-line controls. On the right, you'll find the headset's volume/track controls and a multi-function button. On the left: a power button. When not in use, the Metallo can be compacted down and stashed away. That's something other neckband-style earphones can't do, and I'd love to see more companies adopt this same approach in the future.

Unfortunately, the genius of this design falters between the neckband

and your ears. The cables that run from the inline controls to each earbud measure 10.5 inches in length, and this excessive wiring makes wearing the Metallo awkward to wear. I could hear the cables bounce as I walked around and I could feel them banging against my neck and shoulders with every step. Had a shorter length or heavier gauge of cable been used, these microphonics might have been avoidable.

As the majority of the Metallo's electronics are contained within its neckband, V-Moda was able to keep the headset's earbuds small. By using a metal alloy in the construction of their end caps, the Metallo's designers were able to provide the earbuds with some weight despite their compact size. This combination of compact dimensions and a little heft grants these earphones a degree of luxury they'd otherwise lack.

I manage to achieve a secure fit with the wide variety of silicone wings and ear caps that come with the Metallo, but fashion-conscious buyers will be pleased to know you can customize it with 3D-printed end caps available via V-Moda's website. Unfortunately, none of



the available silicone tips provided a reasonable level of passive noise cancellation. While listening at all but the highest volumes, I was still able to hear my surroundings.

V-Moda claims that the Metallo passed “sweat and weather” testing, but I have no idea what this means. Can you wear them in a downpour? Should you take them off before entering a sauna or having a shower? As V-Moda provided no IPX rating for these earphones, users would do well to exercise caution while wearing them around liquids of any kind.

V-Moda claims that the earphones can provide up to 10 hours of runtime before they need to be charged. Over a week of testing, I found this estimate to be accurate.

As for connectivity, you won't find any problems here. During testing, I found the Metallo's Bluetooth connection to be rock

solid up to 10 feet away from my audio source. Provided your smartphone or tablet support it—iOS devices need not apply—these headphones also support Qualcomm’s aptX codec.

SOUND

Some earphones that sound great no matter what you’re listening to. These aren’t those. That said, for certain types of music, the audio that the Metallo serves up is absolutely outstanding.

Part of the problem—as well as one of the things that these earphones get right—is how much bass they offer.

There’s a lot of it, and under the right circumstances, it’s fabulous.

The snarl of Chuck D’s voice and the thumping beat in Public Enemy’s “Rebel Without a Pause” have seldom sounded better. I can say the same for the Beastie Boys’ “Shake Your Rump” and Lustmord’s “Astronomicon.”

That said, the Metallo’s ample bass often trampled over the vocal work in many of the tracks I listened to. It also proved a problem while listening to acoustic music. I’ve enjoyed “Carboni’s Farewell” by Shooglenifty for years. It’s a piece I know well. While

listening to it with the Metallo, I found that much of the nuance of the band’s slowly building performance was lost. The high voice of the band’s mandolin, banjo and fiddle seemed deeper than usual, leaving me feeling like I was listening to a bootlegged alternate take. My experience was similar while listening to music by The Bothy Band, Shakey Graves, and David Bowie: a whole lotta bass at the cost of everything else.

If you listen to hip hop, ambient, or dance music, you may well love these earphones. For everyone else, their sound may fall short.

No matter your taste in music, you’ll be

happy with the audio quality of phone calls and FaceTime chats while using these headphones. I had no trouble understanding people I spoke with, and the parties on the other end of the line had no trouble understanding me.

BOTTOM LINE

The V-Moda Forza Metallo wireless earphones boast an ingenious design and are comfortable to wear for hours at a time, both in and out of your ears. However, the heavy amount of bass these earbuds serve up might not agree with all listeners. ■



V-Moda Forza Metallo wireless earphones

PROS

- Feel and look more luxurious than they cost.
- 10 hours of runtime between charges.
- Offer benefit of neckband design but can be compacted down for storage.

CONS

- Long earbud cables get in the way.
- Irritating level of microphonics.
- Quiet, compared to similar priced earphones.

PRICE

\$117

COMPANY

V-Moda

Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN



SAVE EMAIL DOWNLOADED TO AN iPhone OR iPad VIA POP3 OR A LOCAL iOS MAIL FOLDER

It's easy to think that an iOS backup would include all the personal data stored on your iPhone or iPad. But Apple explains in a support page that some things aren't copied off your phone, because they're stored elsewhere. This includes "data stored in other cloud services, like Gmail

and Exchange mail."

What if you download messages from an email account to your iOS device and they're deleted from the server? Those emails are gone for good when your iPhone or iPad is restored from backup or dies. Apple doesn't mention this in the support note or elsewhere, even though it can affect people who store certain messages locally on their devices instead of synced with a mail server.

The main issue is for folks using an outdated method of email retrieval called POP3. POP3 pulls down messages from an email server, but it doesn't really record the state of messages that remain on a server. Most POP3 configurations download a message then delete it from the server.

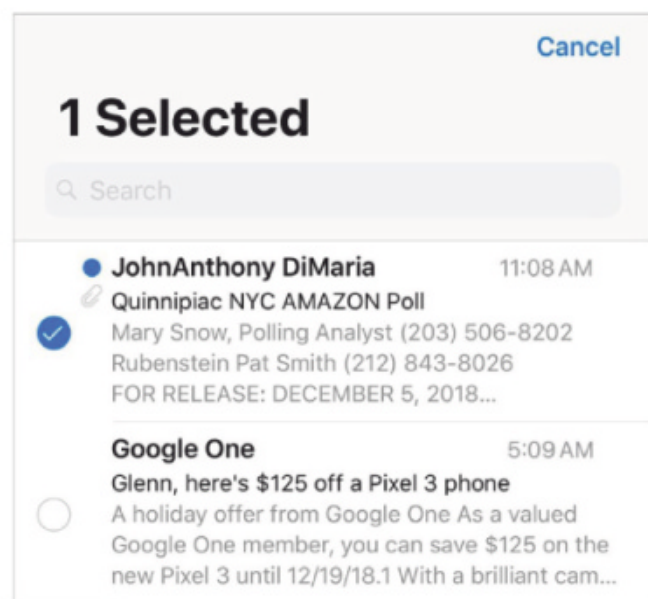
The IMAP protocol has almost entirely replaced POP3. It allows synchronization of messages and folders between clients and servers, giving you access to the same messages and message filing organization on all your devices, like Dropbox or iCloud Drive for mail.

Mail largely remains on the server, with some exceptions. You can opt to configure iOS so that any or all of your Drafts, Deleted, and Archive folders are stored locally on a device. (See Settings → Passwords & Accounts → your mail account → Account → Advanced, and tap any item under Mailbox Behaviors.)

This has left a gap for people either using POP3 or local storage for some of their IMAP special folders because if you have a sudden device failure, need to restore a phone or tablet from a backup, or want to migrate from one device to another, this locally stored email is lost.

Move your POP3 mail

However, you can move all this email to an IMAP-supporting email account. It's easy if



With a few taps, starting here, you can select all messages in a mail folder.

you use a set of actions that Apple doesn't document, but will save you an enormous amount of time—you don't have to select each message individually.

(This is the best trick I've learned about in iOS Mail in years, and a big hat tip to this 2015 article at TapSmart (go.macworld.com/tpsm), that explains it in terms of deleting all messages in a folder.)

If you don't already have an IMAP account set up, create one and set it up in iOS, even if it's temporary. Services like Gmail let you create free accounts and support IMAP. You can also use iCloud email, but check that you have enough free iCloud storage.

Now in each individual folder that has downloaded messages, follow these steps, which require close attention. (The

video after the instructions demonstrate the steps below.)

1. Tap Edit.
2. Tap the checkbox to the left of the topmost message.
3. Now tap and hold the Move button at the bottom.
4. While still holding the Move button, use another finger to uncheck the message selection box at the top.
5. Release the Move button.
6. In a few second, a Move message appears that shows that all messages in that mailbox are available to be moved.
7. Tap Accounts at the upper left, and then tap the mail account to which you want to move the mail, and then tap the folder.

I don't know of any email service that only allows POP3 retrieval, so you should be able to switch from POP3 to IMAP on any mail host you currently use. (Because IMAP syncs messages, you might lose any downloaded mail. Make sure and copy all your messages off before switching to

IMAP even at the same mail host.)

Visit your mail host or talk to a system administrator to get the IMAP settings, and use the Settings path above to update your account. If you can't use IMAP, set up a new account!

CAN'T FIGURE OUT HOW TO TYPE A CHARACTER ON A MAC? IT'S TIME FOR THE VIRTUAL KEYBOARD

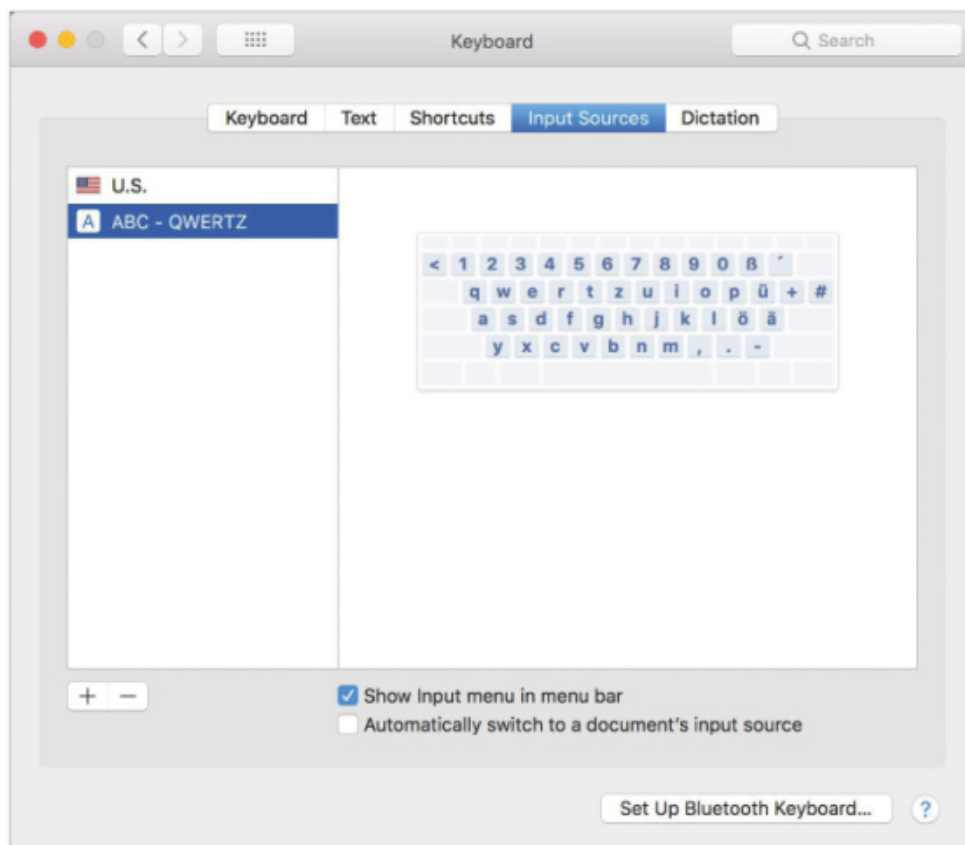
As a long-time Mac user, I once had to rely on Key Caps, an early Mac helper that would show you where special characters hid on a keyboard. Holding down Option and Shift-Option would reveal the secrets of π and $\%$ and accent marks.

That feature never disappeared, though it did recede from view, and was renamed Keyboard Viewer. You may rarely need it—except when you're trying to type a key that your keyboard doesn't allow or you can't find.

This might happen if you've got a wonky laptop keyboard that you're planning to take in for replacement, or if



Keyboard Viewer shows you “key caps.” You can click to “type.”



You can pick which keyboard layouts to make available through the Keyboard preference pane.

you're using a Mac set to a language you don't speak or if you're trying to enter characters in that language.

I've heard from readers who can't type a particular key because something's gone wrong with their hardware keyboard and they can't summon up a replacement keyboard to plug in and use. With Keyboard Viewer, you can click keys and those characters are inserted wherever your cursor is. (One reader couldn't enter their password in order to prep a machine to take in for repair, because the password contained...a character that the keyboard

could no longer type.)

One limitation: You can only click keys that appear without the use of onscreen Shift or Option keys. For some reason, Apple doesn't offer a way to click-lock those keys to perform combinations. However, if your physical keyboard can still generate an Option or Shift key click, you can use those real keys to access virtual ones.

In the Keyboard preference pane's Input Sources tab, you can click the + button in the lower left and add keyboards of many languages. Check Show Input Menu in Menu Bar, and a tiny keyboard/Command key icon appears in the upper-right corner of your screen. (If you have multiple keyboards added, a flag or icon appears that's associated with the keyboard currently selected, instead.)

As a bonus, the Keyboard Viewer also highlights keys as you type them, if you ever wanted to visualize your physical typing on screen.

IF MACOS'S MIGRATION ASSISTANT FAILS, HERE ARE OTHER WAYS TO MOVE ACCOUNTS

This past Christmas, my kids received new Mac laptops. We managed to keep their previous computers working for seven years, but these new Macs will see my kids through to college and maybe beyond. New Macs meant that we had to move all their files from the older computers to the new ones.

The old machines both had macOS High Sierra installed, and the new ones have the current macOS, Mojave. Following Apple's instructions, I started migration on both older systems to both

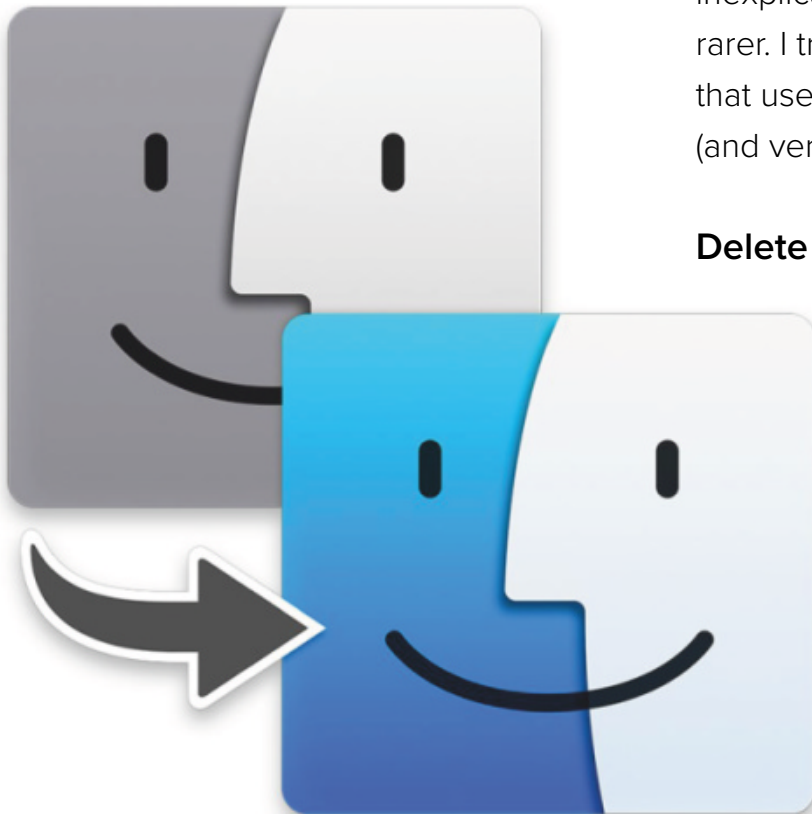
newer ones. (It made for a lot of smiles and laughs as family members passed through the room with four Macs all chugging away at once.)

Both computers gave errors at the end of multi-hour migrations, though one pair of computers appeared to have fully transferred data. The other pair did not; it seemed to have transferred apps and system preferences, but left out the main user. This may have been due to that user having parental controls set, though Migration Assistant doesn't warn of that being a problem, nor is there a mention in any support notes from Apple.

In my experience with Migration Assistant over the years, this kind of inexplicable problem has become ever rarer. I tried three different methods to shift that user directory over, and only the third (and very technical one) worked.

Delete and archive the account

The most obvious way to move the account was to use the Users & Groups preference pane's option to remove an account, but archive its contents. First ensure you have a backup of the older computer. Then follow these steps on that computer. (Note that for later migration methods, you'll return to use some of these steps, too.)



1. Open the Users & Groups preference pane.

2. Click the log and enter details for an administrative user.

3. Select the account in the user list.

4. Click the - (minus) sign.

5. Make sure the first option is selected, Save the Home Folder in a Disk Image. Then click Delete User.

6. This should prompt you to save the user's directory, and then macOS will copy it to that disk image.

7. Copy the disk image file via the network or an external drive to the newer Mac.

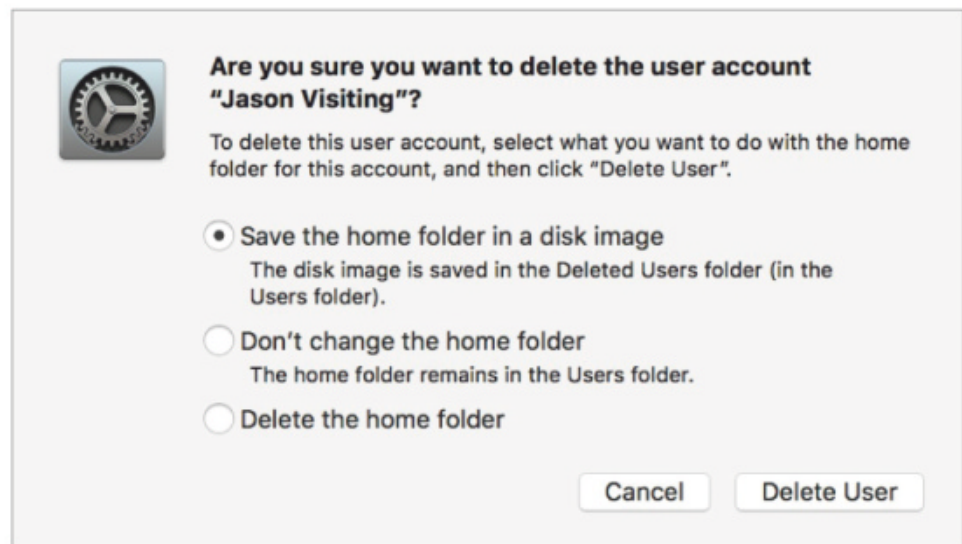
8. Mount the disk image by double clicking it.

9. Create a new folder in the Users directory with the name you want to use for the new account.

10. Copy the entire contents of the disk image into that new directory. (You may have to authenticate copying in both steps 9 and 10.)

11. When complete, eject the disk image.

12. In Users & Groups, click + (plus) to create a new account. Make sure the



You can turn a user's directory into a disk image by choosing to delete the user.

Account Name is different from the folder you created in Users in step 9, as the Account Name is used to create the name of the folder in the Users directory.

13. As described in this recent article (go.macworld.com/exst), you "repoint" the home directory to the directory you just copied. (In brief, Control-click the new user name, click Choose to the right of Home Directory, and select that new directory. Click OK.)

14. Now you need to fix permissions. In the Finder, select the new user's folder in the Users directory and choose File > Get Info.

15. Under Sharing & Permissions, click the lock icon and enter an administrative account's password.

16. Click the + sign and pick the just-created user that should become the owner of this directory and then click Select.

17. Set that user to Read & Write under the Privilege column.

18. Now select the gear icon and choose “Make account name the Owner.”

19. Finally, select the gear icon and choose Apply to Enclosed Items and click OK. This may take a moment or several minutes.

Now you’re complete. I’d make sure fast-user switching was enabled (in Users & Groups → Login Options), and then attempt to log into the user you just changed the directory for. If you can’t log in, you may need to take one of the steps below.

For me, this option failed after step 6, with macOS refusing to delete and archive the account. I moved on to try to the next option.

Use Disk Utility to archive the user folder as a disk image

Disk Utility can create a disk image from a folder, and this seemed like the logical next step.

1. Launch Disk Utility.

2. Choose File → New Image → Image from Folder.

3. Choose the user directory.

4. Save the disk image and then proceed at step 7 above.

Again, this failed for me. Disk Utility was unable to create the disk image, so I proceeded to the next option.

Copy via a network connection

I thought perhaps the user directory could simply be copied over, bypassing the archive and disk image states.

1. On the new machine, enable file sharing in the Sharing preference pane by checking the File Sharing box.

2. On the old machine in the Finder, choose Go → Network and double-click the new computer’s name.

3. Click Connect As in the window’s upper right and enter an administrative user and password.

4. Mount the main volume by double clicking it.

5. Drag the user directory you want to copy from the old machine to Users → Shared on the new computer. This bypasses permissions issues in copying.

6. When complete, on the new machine hold down the Command key and drag the user directory into the main Users folder. You will have to authenticate this “move” operation with an administrative password. (If the old account matches an account that already exists on the new machine, rename the folder you copied to the Shared directory to something else before you move it.)

7. Now proceed at step 12 above.

Once again, sadly, as Christmas Day progressed, this option failed for me as well. I proceeded to the most-technical option.

Use command-line tools to copy all files

Warning! It's easy to make errors at the command line that could cause problems with your Mac, including requiring a full restore of the system and all your files. Make a complete backup and follow steps below exactly. If you're not confident, don't use this method.

This is essentially a "recipe" that you can follow with careful attention to detail in which you substitute in your own user account names and folder names.

Here's how it works. An old Unix command called tar (for "tape archive"—it's that old) creates ZIP-like archives of files and folders that exactly capture the directory hierarchy. Just as with ZIP, when you extract an archive, the structure is reproduced.

Instead of creating an archive on disk, you can use tar to send the archive across a network connection where it's extracted live as each file is added. It's a kind of bizarre Unix copy operation that's often more reliable and possible in cases where others fail.

To carry this out, start steps 1 to 4 under "Copy via a network connection."

Now, make sure you know these four pieces of information:

- > The directory name on the old machine in the Users folder. Let's call this the **OLDACCOUNT**.

- > The directory name you created on the new machine in the Users folder. Let's call this the **NEWACCOUNT**.

- > The Account Name as shown in the Users & Groups preference pane's Advanced Options (see above for finding that screen). Call that **SHORTNAME**.

- > The destination drive name as mounted on your old computer. Enter `ls -l /Volumes` in the Terminal, and you get a list of all internal, external, and network drives. Note the full name of your destination drive. Let's call that, **NEWDRIVE**.

You're finally ready to proceed. Enter these two commands on the old computer with all those substitutions, ending each by pressing Return. Also make sure you have a single straight quote around the paths to prevent errors that can occur when spaces

```
Mininum-Minival:/ glenn$ ls -l /Volumes
total 8
drwxrwxr-x@ 19 glenn  staff   714 Dec  8 09:41 Four Terabytes
lrwxr-xr-x   1 root   wheel    1 Dec 11 18:36 Minimal Minterval -> /
drwxr-xr-x@ 43 root   wheel 1530 Dec 15 00:21 New Minimal Backup
drwxrwxrwx@ 30 glenn  staff 1088 Aug 28 11:23 macroStack
```

In the Terminal, view a list of internal, external, and network drives.

are in the names of users, volumes, or paths. (This is all one line.)

```
cd '/Users/OLDACCOUNT' sudo  
tar cvf - . | (cd '/Volumes/  
NEWDRIVE/Users/Shared/  
NEWACCOUNT'; tar xf -)
```

With this last operation, you will likely have to enter the password for the account you're using. (**sudo** means "run this command as if you're the 'superuser,' or most important account on this computer.")

So if I'm copying my **glennfleishman** user directory on my old computer to a **glenn** account on my new computer, and the startup drive on the new computer is named **Amusing Drive Name**, those commands would look like this. (The line beginning **sudo** is all one line.)

```
cd '/Users/glennfleishman'  
sudo tar cvf - . | (cd '/  
Volumes/Amusing Drive Name/Users/  
Shared/glenn'; tar xf -)
```

(For those interested, the commands mean: "Change directory to the glennfleishman location. Create a tape archive that passes the contents along to the next program in a chain instead of writing to a file on disk. For each file, first change director to the destination networked drive's directory, then extract the archived file into the correct hierarchical location.")

This can take a long while, even with

fast Wi-Fi or ethernet, and the **v** option in that first tar in the second line stands for "verbose": it will display a single line for every one of likely 10,000s to 100,000s of files copied.

When this is all complete, you need to move the user directory on the new machine, as in step 6 under "Copy via a network connection": Hold down the Command key and drag the user directory into the main Users folder (ensuring first it's not named the same as a folder already in Users), and enter a password if required.

You can then continue to proceed at step 12 in the first method above.

While steps 14 to 19 for changing permissions should work, it's possible you'll encounter a problem because of how the files are copied. In that case, you can use Terminal on the new computer to solve the problem. (Why is "wheel" in there? It's a standard Unix group name used for administrative purposes.)

1. On your new computer, launch Terminal.
2. At the command line enter
3. **sudo chown -R SHORTNAME:wheel /Users/NEWACCOUNT**
4. Enter a password if prompted to proceed.

In the case of my example above, that would look like

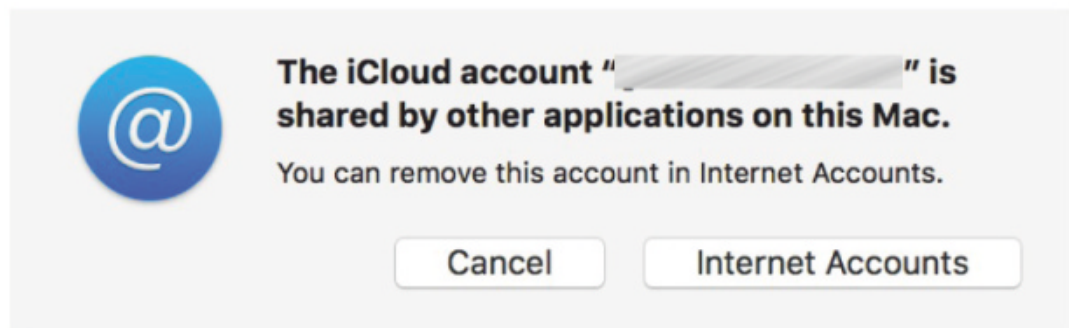
```
sudo chown -R glenn:wheel /  
Users/glenn
```

You're finally ready to proceed. Enter these two commands on the old computer with all those substitutions, ending each by pressing Return. Also make sure you

IF YOU CAN'T GET MACOS MAIL TO WORK AFTER UPGRADING TO TWO-FACTOR AUTHENTICATION, HERE'S A WAY TO FIX IT

I highly recommend Apple's two-factor authentication (2FA) for your Apple ID (go.macworld.com/2fct) and associated iCloud services as a way to reduce the threat of a remote hijack of your account. (Although note that you can't turn 2FA off once you enable it [go.macworld.com/cnof].) However, depending on how you've used iCloud in the past, you might run up against a quirk: You can't get Mail in macOS to work after upgrading to 2FA.

Apple automates the inclusion of your iCloud email account in Mail for macOS through a few system components. If you're logged into your iCloud account via the iCloud preference pane, then that



This error indicates that there's something else wrong with your account.

pane effectively manages Mail accounts. The Internet Accounts preference pane also lists iCloud connections along with other accounts you've set up at major services like Google and other companies for email and other services.

If you upgrade your Apple ID to 2FA, you may be called upon to authenticate that upgrade on all your devices associated with the same iCloud account. (You can upgrade via macOS, in which case all the t's are crossed and i's dotted at that point for authentication on that machine.) That also handles the conduit through which Mail access iCloud for email.

But if you upgrade to 2FA and you find yourself prompted for a password in Mail for your iCloud account, it likely means you once set up iCloud email using manual settings, probably a few years ago, and have just kept it that way through subsequent upgrades. (Apple will let you create "app-specific passwords" via its Apple ID site (go.macworld.com/